# The Builder.

*SATURDAY, JANUARY* 20, 1855.

A WINTER day at Sydenham, under the great glass roof, when the sun is shining, may be made as pleasant as a balmy one in June—with a difference. There is less lounging along the terraces, sauntering about the grounds, and no stretching on the grass. Walking outside is done with rapidity, such as is employed when taking a "constitutional;" and the antediluvians repose almost as peacefully as the fossil forms from which they have been built did in their far-down strata. This is fortunate, since they are not in a state to receive company: they are going through a course of paint, and are mighty grim. One, indeed, looks so ugly that we were not surprised to hear an old lady point it out as the *nasty*-don. The enthusiastic dreamer of the splendour of the coming fountains may venture into the "Slough of Des*pond*," which ordinarily surrounds the lower part of what will yet be the goodliest terrace in England; but generally the bulk of visitors now find the building or its immediate vicinity the attraction. And unquestionably it presents the most delightful and instructive promenade, in which "Paterfamilias" can turn out his juveniles for a holiday, or wander himself to pick up stray bits of information. You may either pass behind the monster bed-tick, which cuts off the palm-tree end of the building, to admit of a higher temperature, and there listen to the solemn melody of Körner, the playful Charivari of Zullner, and the last new polka; or pass into a court which condenses into one little cell a summary of all that the cunning brain and the very skilful fingers of man has in the course of time achieved in some department of heaven-aspiring art; or, sauntering about all sorts of odd corners, with pleasant companions to induce and reciprocate remark, you may survey the cold lineaments of the "foremost men of all their time," and speculate on the connection between their heads and their deeds. Such was our occupation one day lately, when we picked out the "architects," and now purpose throwing together some memoranda about them, from the late Mr. Phillips's account of the Portrait Gallery and some other sources; for we are afraid that from the great mass of matter in the shape of catalogues, much of their interesting and valuable information is lying buried, readers being somewhat deterred by the extent. Mr. Phillips has truly remarked that "Man looks at his own image with a more feeling curiosity than he regards the architectural remains of a city, however ancient, or of any structure, however beautiful. The broad brow of the poet, whose works we have read; or the martial air of the soldier whose deeds we have heard of, excite an instant desire for more intimate acquaintance with the men." "A portrait gallery exhibits the men who have worked their way to eminence. Biography teaches how they have travelled the difficult and thorny road." In a word, as Dionysius, of Halicarnassus, expressed it, biography is philosophy teaching by examples.

Discarding the elements of race and country, and beginning simply at the earliest in the stream of time, we see Niccola Pisano, who was born somewhere about 1205, and died about 1290.* Niccola had no master: he was the reviver of sculpture in Italy, and built a spiral staircase in the campanile of St. Nicholas of the Augustines. He was the father of John of Pisa, the architect of the Campo Santo, in that city. John died in 1320: he executed a portrait of his father in the church of Santa Maria della Spina, where he was directing the works; and it may be from this that the bust of which we have a cast was made. Niccola may be called a Mediæval, and he is the only one here. The old Gothic architects left us no busts of themselves, scarcely their names. Next him stands Laboureur's bust of Andrea di Cione, better known by his surname, Orcagna. We do not know the precise date of his birth: somewhere about 1370 he died. In each of his three capacities as painter, sculptor, and architect, this good and great man executed several works. Some of them still exist in a shattered state, in the Campo Santo, at Pisa; in the Strozzi Chapel, and the Or-San-Michele, at Florence. The grandeur and grouping of the figures in his paintings were, at a later period, striven for, even by Michelangelo and Raffaelle. There is a mezzo-relievo portrait of Orcagna by his own hand, behind the altar of the Florentine church already named. He is there represented as an Apostle, shaven, and wearing a hood. Of the next Italian sculptor and architect, Filippo Brunelleschi, we know more. He was born at Florence in 1375, and died in 1444, according to Quatremere de Quincy, who gives an interesting account of him. The "Hand-book" gives 1377 and 1446 as the dates of his birth and death. He was the son of a notary, who at first placed him with a goldsmith, whence he was led to apply himself to sculpture. He was the friend of Donatello, the great sculptor of that age (you may see casts of many of his works at Sydenham), and together they went to Rome, where he was overcome with astonishment at the sight of the architectural remains. Awakened from this first impression, says De Quincy, "Brunelleschi knew no repose. He forgot the hours of repast and sleep. He felt no other necessity than that of making plans, measuring the ancient edifices, investigating the true character of the three orders, and discovering that system of reason, intelligence, and harmony which would re-establish and perpetuate the authority of its principles." His resources failed, but by taking to his former business he was able to procure the means of prolonging his studies in Rome. He is best known as the constructor of the Cupola of Santa Maria del Fiore, at Florence, and built churches, palaces, and fortifications. Michelangelo declared that it was difficult to imitate, and impossible to excel him. He was an amiable man: notice his large, persevering, and kindly-looking head.

Bramante's reflective and charming head is not far off. He was born in 1444, at Castel Durante, according to the "Handbook," but this is not certain; and he died at Rome, in 1514. He condemned himself to privations to study architecture. He built, amongst other things, the circular temple of St. Pietro, in Montorio, the vast palace of the Chancery, one of the most remarkable buildings in Rome, and was selected to rebuild St. Peter's. To him belongs the project of the dome, though Michelangelo carried it out. "No one can deny," writes the great man last named, "that Bramante was as proficient in architecture as any one since the ancients up to our own time." He is accused of having endeavoured to injure Michelangelo, and not without truth. Poor human nature!

Stand uncovered before the next, for it represents Michelangelo Buonarotti himself. This bust is from the marble by Alessandro d'Este, and one of those contributed to the Capitoline Museum, at the expense of Canova, when he was president of the Academy of St. Luke, at Rome. It conveys an idea of coarseness which would hardly seem to belong to Michelangelo's natural expression, marked as it is with power and energy. It will be remembered how his nose was broken by a blow from his fellow student, Torrigiano. He was buried in Sta. Croce, at Florence, his monument there being designed and executed under the superintendence of Vasari, the historian of the painters. There is, in the Capitoline Museum, a bust of Michelangelo, said to be by his own hand. He was born in 1474, and died on the 17th of February, 1564, — the "Handbook" says 1563. His father and uncle opposed his desire to prosecute the arts, but he strove on, feeling his power. "All learning," says Phillips truly, "and all knowledge came to Michelangelo, perhaps, even more than to Leonardo da Vinci, his mighty contemporary, as a rightful inheritance, to be magnificently accepted, and sumptuously enjoyed. Poet, musician, sculptor, architect, engineer, painter, anatomist, man of science—his titles to honour are inexhaustible. His genius was universal—his grasp boundless. All his works, of whatever kind, bear the broad, deep stamp of his haughty, masculine spirit, and constitute the immortal expression of strength, energy, and sublimest passion. The feeling of Michelangelo was strong, intense, grand, penetrating; his thought as clear as it was profound. His life is a series of conflicts in the world of intellect. Domenico Ghirlandaio has the honour of claiming Buonarotti as his pupil. By Ghirlandaio the stripling was introduced to Lorenzo de' Medici, who, as well as his successor, became the steady friend of the great artist." In 1503, he was commissioned to paint one end of the Great Hall of Council, Leonardo da Vinci being entrusted with the other. Never before had two such spirits met to contend for glory. His statue of Moses, and the ceiling of the Sistine Chapel, were produced under Pope Julius II. "Under Leo X. and Adrian, works of equal power issued from his brain. In 1546, he was commanded by the Pope to undertake the direction of the works at St. Peter's. He consented only upon the condition that he should receive no salary, and laboured "for the love of God alone." In seventeen years he prosecuted the pious service, and raised the sacred edifice as far as the base of the cupola. The undying memorials of his chisel and pencil speak the intellectural supremacy of the man beyond all words of praise. They will command wonder, delight, admiration, respect, fame, whilst the world lasts. There is nothing factitious, no studied allurement, no imposture in his work. It is all true, simple, sublime." His head shows great power, and a contemptuous expression which we should be glad to miss, but are forced to pardon. It was thus he looked, doubtless, when he said to the servants of Pope Julius II. who had refused him admittance on a particular occasion, after other marks of coolness,—"When his Holiness sends to seek me, you tell him that I am not here;" and then he departed for Florence, and left word with his servants to sell all his goods, and follow him. It was some time before the Pope could coax him back, but he did so ultimately. With all his irascibility, he was a stanch friend and an upright man. We may all remember with advantage his favourite maxim:—"*Chi va dietrò ad altri mai non gli passa inanzi.*"

We must be briefer in our notes, or we shall not get through the list. Raffaelle was a gentleman, as well as a genius: you may see it in his face, though it has, to our eyes, a spice of coarseness. He was born at Urbino, in Italy, in 1483, and died at thirty-seven years of age! What he did in that brief life was marvellous. He was an architect and sculptor, as well as the prince of painters. He directed the works at St. Peter's in 1515, and built two palaces in Florence. De Quincy points justly to the architectural portion of Raffaelle's wonderful picture, —the School of Athens—as a noble invention. Envy attributed it to Bramante, but evidence is wanting and inference against it. Of his character it is almost enough to say, that all men

* These busts will be found behind the statue of Rubens in the Great Transept, on east side of the nave.

loved him. He built the court of the Vatican, and it was there he painted those fifty-two subjects from the Old and New Testament, which have been called Raffaelle's Bible. The next bust represents Sanmicheli, who was first employed at the cathedral of Orvietto, and built the gateways of Verona, and some palaces. He was much employed in fortifying Italian cities. He died in 1559, when he was seventy-five years of age. Giulio Romano was an architect too; he assisted Raffaelle at the Vatican, and built palaces in Mantua; but we must pass him by, and go to Andrea Palladio, who was born at Vicenza, in Italy, in 1518, and died there in 1580. He largely studied the ancient monuments of architecture, and adapted it to modern purposes with great success. He created, indeed, a style of architecture, which bears his name, and has been over-praised and over-abused. Inigo Jones may be called his disciple. Vitruvius was his master. The circumstances of the time confined him chiefly to the execution of noble residences, of which he has left a number of elegant specimens in Vicenza and Venice, as well as some churches, and the well-known theatre. His treatise on architecture has been translated into all languages.

Inigo Jones* was born in 1573, and died on the 21st of June, 1652. The "Handbook" says erroneously 1572 and 1651. It is stated, but without much certainty, that he served his apprenticeship to a joiner, but his talent for landscape-drawing obtained for him the favour of the Earl of Pembroke, in whose company he visited France, Flanders, Germany, and Italy. At Venice he was inspired with a taste for architecture, and, following the art with ardour, obtained the office of first architect to the King of Denmark. He was in England, however, as early as 1604-5, where he assisted at various masques. The attachment of Inigo Jones, who was a Roman Catholic, to the cause of Charles I. caused him great loss and suffering during the civil wars; and he died, not long after the execution of the king, in great trouble. He made a second visit to Italy,—for his copy of Palladio, preserved at Worcester College, Oxford, contains an entry dated "Vicenza, Mundaie, the 23rd September, 1613." The Banqueting House at Whitehall, his most famous work, was finished in March 1622, at an expense of 14,940*l.* 4s. 1d. Of his quarrels with Ben Jonson, who ridiculed him as Vitruvius Hoop, and sneers at what he calls

"Thy twice conceived, thrice paid for imagery,"

we have before now spoken. Lincoln's-inn-fields and Covent-garden piazza had the assistance of Inigo Jones.

Naturally, the mind turns from the great man whom we have just noticed to the later and yet greater name of Christopher Wren, who was just twenty when Jones died. As a mathematician, Wren was in his day second only to Newton, and in general scientific knowledge he had no superior. At thirteen he had invented a new astronomical instrument. At fourteen he entered Wadham College, Oxford, and, young as he was, formed one of the original members of a club established for philosophical discoveries and experiments,—the club, indeed, out of which grew the Royal Society. When twenty-five he was Professor of Astronomy at Gresham College, London, then a very different institution from what it is now. At the Restoration he became Savilian Professor of Geometry at Oxford. His skill as an architect having been meanwhile shown in the Sheldonian theatre there. The popular fame of Wren rests on St. Paul's Cathedral, which he began to rebuild nine years after the Great Fire, taking thirty-five years to complete his magnificent labour. St. Paul's is one of the few great ecclesiastical edifices which was completed by those who commenced it. One architect and one master-mason finished the great task. Before and during its progress, Wren was engaged on other edifices, and applied his vigorous mind to the most abstruse branches of science. His mechanical discoveries are numerous. He invented an instrument for ascertaining the amount of rain falling in each year; he proposed means which rendered the taking of astronomical observations more easy and exact; he was the originator of the attempt to introduce fluids into the veins of animals; and there is every reason to believe that to him, and not to Prince Rupert, we owe the art of mezzotint engraving. Wren's energy in the pursuit of science appears to have been immense. Notwithstanding the enormous labour which devolved on him in the rebuilding of the burnt City, there is scarcely a meeting of the Royal Society recorded wherein he is not seen to take a prominent part in the supply of papers and contribution of information. Between 1666 and 1711 he designed and built fifty-three parish churches in London, and numerous other buildings. His genius, his industry, his integrity, and his noble spirit, could not protect him from the attacks of the envious, who contrived to embitter his latter years. As Pope wrote:—

"See under Ripley rise a new Whitehall,
While Jones' and Boyle's united labours fall;
While *Wren* with sorrow to the grave descends,
Gay dies unpensioned with a hundred friends."

"Clever but disagreeable," said one, looking up at a bust, in a tone which seemed to say, the speaker had a right to an opinion. Let us see whose head it is. Schinkel, of Berlin. Well, it certainly does convey that impression, but as there are yet several other architects in the collection, and we have given as much space to the subject as we can afford to-day, we will leave Karl Frederick Schinkel, to commence with him in our next ramble amongst the busts at Sydenham.

* Bust will be found behind the Farnese Hercules, at north-west angle of great transept and nave.

## A CRITICAL REVIEW OF ST. GEORGE'S HALL AND THE ASSIZE COURTS, LIVERPOOL.*

BUILDINGS peripteral, or nearly so, unless the exterior surface presented by entablature and columns bears a greater proportion to the whole surface of the façades than the Corinthian order allows, a proportion found only in the Doric or Ionic, are apt to show too much action, too great an alternation of minute and uniform masses of light and shade; suggesting, I think, in reference to the edifice in question, that the adoption of a Corinthian ordonnance should have dictated the securing of a greater extent of mural space at the extremities of the eastern or principal façade; a remark, by the way, which applies equally to the front of the Fitzwilliam Museum at Cambridge, as well as to some other meritorious structures. Increased extent of plain wall at the extremities of the east façade of St. George's Hall, it would have been natural to repeat round the corners, and much to the advantage of the south portico and north pseudo portico, both of which would be benefited by wider backgrounds, from which to spring, and to balance their own masses in the nature of wings receiving a broader and quieter light. Breadth and repose would, I think, have been further promoted by having anta-caps, consisting of a series of plain mouldings and delicately carved necking, instead of the fully enriched Corinthian capitals, to the square pillars; as in a plain building, almost entirely surrounded by columns or pilasters, like St. George's Hall, such capitals to every column and pilaster forms to an eye at some small distance a dark dotted line, that intersects the composition, and is so far unfavourable to its unity. The means suggested would also have given greater effect, by contrast, to the centre colonnade, and greater variety of tone to the whole.

The building, under such treatment, I grant, would have been less rich upon the whole. But there are other parts that could have received the difference in sculptural expenditure, and, as I believe, with greater advantage as regards entire effect; the frieze, for instance, particularly that of the eastern portico, decoration of which by frieze embellishment, as well as by statues above, would be requisite to give it its due predominance in beauty and power over the south one.

But what may be deemed a positive fault betrays itself at the back in the several tiers of windows with which it is perforated. I do not include the hall windows, for they are but temporary, but those of the smaller apartments. Windows *may* be so treated as to be as innocent of any injury to the façade they pierce, however fully architectural or classically pure it may be, as a door or niche; and our noble sheets of polished plate glass render the task less difficult than formerly; but at the back of St. George's Hall no attempt of the kind is made, the window openings being filled in with vertically sliding sashes, the upper ones overhanging the lower, as usual in dwelling-house windows, and divided in the ordinary manner. Such features in an edifice whose purpose is so far removed above the ordinary utilities of life, association alone would go far to render disagreeable, much as it would the occurrence of so many low metaphors in an epic poem. Although but a superficial blemish that could of course be easily removed, they are, nevertheless, really incongruous, and show positively as a blunder in the building,—a wrong word in its speech, a false note in the music, and, being somewhat numerous, give a dash of the vulgar and commonplace to what would otherwise be a poetic and unique façade.

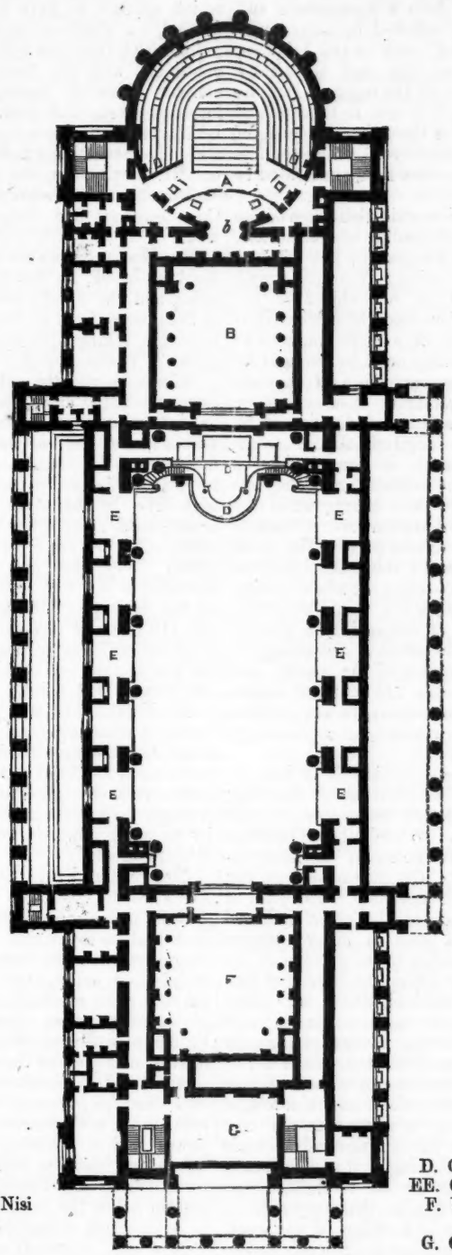
St. George's Hall bears promise here and there, by projecting blocks of masonry, of some future addition of decoration in the shape of sculpture in relief. This and more it much needs, for it is comparatively naked, and reminds us of the melancholy contrast, as to degree of embellishment, formed by works of the day with those of the celebrated periods of art both in ancient and modern times,—a contrast that is increasing rather than diminishing. Compare St. George's Hall with the Doric temples of Greece, of which high-class sculpture was an integral part,—with the cathedrals of mediæval Europe,—with the Renaissance and revived Roman churches of Italy,—with St. Peter's, at Rome, for example, or Milan Cathedral, which swarms with an ever-present and immortal congregation, in the shape of figure-sculpture; besides being without frieze decoration, either natural or geometrical, it has not in its principal façade, or elsewhere, except at one end, embraced that form of humanity, for the illustration of which the style is so well fitted; without which it strikes not the "full-voiced harmony of beauty," and lacks the high and entire being belonging to its nature.

Let it not be supposed that there is anything in the style of St. George's Hall, in its severity of line or chasteness of form, that renders it an exception to the rule alluded to,—that restricts it to abstract form of column and cornice alone, and forbids its being fully wedded to figure-sculpture or other natural ornamentation. Purity and nudity are not convertible terms, and, though our edifice proves that architecture in the possession of proportion and form alone is a great art,—it is capable of manifesting what, though well known to Egyptian and Greek, is not sufficiently recognised in the present day, that figure-decoration is an ingredient absolutely necessary to the full development of a conception in the grand style of architecture. I believe it may be employed either where the beauty and expression of the features can be seen and felt, or at such distance, as in a finial, for example, that only the majesty of the figure is appreciable; when, while distance will lend it a new enchantment, it will give a picturesque skyline to the exterior, without touching that character of grandeur, or impairing the nobleness and unity of composition, in which the classic architecture is unrivalled.

Indeed, one of the chief things we have to aim at in the development of the classic style is the reconsummation of that union of architecture with sculpture which existed among the Greeks,

* See p. 3, *ante*.

ST. GEORGE'S HALL, LIVERPOOL: PLAN OF UPPER FLOOR.



A. Concert-room.
*b*. Orchestra.
B. Upper part of Nisi Prius Court.
C. Organ.
D. Organ gallery and stairs.
EE. Galleries in hall.
F. Upper part of Crown Court.
G. Grand Jury.

who so treated them, that one spirit informed, one life-blood flowed through both, and architecture and sculpture were one undivisible thing, the sculptural figure being but a higher material development of the architectural essence. And as among them, so among us, such union would produce a more exquisite and perfect creation than either art, unaided by the other, could call forth.

The point most loudly calling for sculptural embellishment in St. George's Hall is over and behind the great central colonnade, where it would find an excellent background in the nude attic of the building, and give it relief in return;* and, if conceived and executed in the broad and simple manner, with the grandeur of form and greatness of style that the architecture would dictate, it would diffuse a brighter glow, and kindle into a sublimer life, the entire body of the edifice.

To this should be added statues, as evidently intended by the architect, over the centre of each of the dwarf intercolumnar walls; and, if the east portico be, as I consider it is, the principal, then the west pseudo-portico has as much right to embellishment as the south one; indeed, it demands it, for due balance of the building, which should be equal, on each side of the centre.

The merit of St. George's Hall lies chieflyin the exterior, which is equalled by but little of the interior. Let us enter the building through the eastern portico, which, having twice the breadth and number of columns of the south one, and a commensurate array of steps, and being the most direct, and, indeed, the only convenient entrance to either the great hall or the Assize Courts, can be regarded in no other light than as the principal entrance to the edifice. The first thing that must strike the visitor is, that, for want of a vestibule, the great hall—which, by the way, should have been entered through the end instead of the side—is too ready of access—approached without the preparation and prelude its importance demands: and I think it must be regarded as a defect in the plan, that, instead of the hall having a vestibule, it should be itself but a vestibule to inferior apartments. The relationship between it and the latter is different to that between the aisle and nave of a cathedral, the nave being the approach to an apartment which, if inferior in size, is for a more sacred purpose, and generally of a more elaborate decoration.

Moreover, the south portico not only is not the entrance to the music-hall, which as a grand room requires a grand and simple mode of access,—it is not the entrance to the Crown Court, to which it is almost contiguous; for, instead of conducting you into a vestibule from which you can proceed straight onwards, and enter the court with the judges' bench before you, it lands you at the back of the said court, from whence you must thread a labyrinth of passages ere you can enter either the court or the great music-hall.

The north hall or vestibule, which is not only beautiful in itself, but in full keeping with the exterior, has the misfortune of being entered from without, in a manner that is quite unworthy of it,—through apertures in the basement, while it has the same defect as the other, in conducting you to the back instead of the front of the court.

The fact is, convenience and propriety of plan, as regards entrance to the courts, have been sacrificed to the very questionable advantage of having the three apartments seen together, and to form one architectural vista. I call it a questionable advantage, as there could be little occasion for any one standing in the Civil Court and looking through the hall to see a Criminal Court in the distance. Had the architect abandoned the idea, and made the great hall quite distinct from the courts—*i.e.* without any direct communication into them—there can be little doubt that each court would have been directly entered from its respective hall; in other words, that the position in reference to the building of each law-court with its judges' bench, retiring-room, &c. would have been the reverse of what it now is.

Again, in the planning of the building the purpose of the hall itself was not kept in view—a fundamental error, whether chargeable upon the architect or his employers I know not. St. George's Hall was intended, I believe, for musical festivals; at least, whatever other purposes it was designed for, as that of a great audience chamber, a banqueting-hall, or assembly-room, that is the purpose which, demanding the most critical care, should have governed its form, and which, if it answered, it is very probable it would not be far unfit for any other. But so little was this arranged for, that when the organ was to be erected, no one knew where to put it, there being no place where it would answer its purpose without interfering with an obvious intention of the architect. As might be expected, it now looks not exactly at its ease, and the room, as a room, would be better without it; for where it stands it mars its symmetry, and appears as an afterthought.

The sacrifice, however, has been made on the right side. Architecture has very properly given way to music and the truthful expression of a musical purpose, which requires that the organ should be placed where it can be seen as well as heard. The organ, being an essential feature, is to the hall what a bed is to a dormitory, or a bookcase to a library, and the eye as well as the ear seeks it.

Entering the hall, the visitor must feel that he has not only approached it too suddenly, but that he has experienced too great a change in scene. To form the interior of a building, many graces should be added to the style of the exterior, but it should be in the same spirit, which, in the present instance, is far from being the case; for stepping from the portico into the great hall is going at once from the frigid to the torrid zone of art, from the Parthenon to the Alhambra. In the first place, if the visitor has duly contemplated the almost peripteral exterior, and enjoyed the simplicity and grandeur arising from the combined array of columns and pilasters, he cannot but feel that a greater amount of columnar richness was due to its principal apartment, which being divided into centre and aisles, gives opportunity for its display as much as does any part of the exterior.

* The pedestals terminating the parapet wall at each end above this portico, are eminently fitted, and I doubt not were intended, for the reception of groups of sculpture. But besides these, a line of statues, connecting them, and corresponding to the number of columns beneath, is necessary to give relief to the attic behind, which without them is disagreeably bare.

The columns within the hall are too few to be much noticed, and too far asunder to have the effect of a colonnade. They appear besides scarcely sufficient for their office of bearing the ceiling, the supporters of which, even on the present arrangement of cross arches, might, I think, have been in couples instead of single columns, with great advantage to the character of the place. I grant that, with a pycnostyle screen, the gallery would be useless as a place for seats, but if it is not at present useless, it is of little value as a gallery. Though obstruction of the view is of less consequence in a place where the entertainment is for the ear rather than the eye, yet the desire to see as well as to hear is generally so great, that a gallery to contain seats should not have been placed behind columns at all. A ceiling could of course be supported, as it often is, by iron columns, of about the proportions of a walking-stick, and as far asunder as even a shopkeeper could wish. Such supports would be no material obstruction of the view from a gallery placed behind them; but this would be a sacrifice of architectural beauty to mere space and material,—the greater to the less; whereas architecture, as a fine art, whose range of action is between the graceful and the grand, the sublime and the beautiful, must have sacrifice made to it, not of fitness and convenience indeed, for want of these would be a defect, but of space and wrought material. Everything that is great and beautiful receives sacrifice. Without sacrifice we cannot have greatness; but we must in architecture as in everything else, take care to sacrifice the lesser to the greater, and lose no essential excellence. In the case under notice, the space occupied by the galleries would not have been altogether a sacrifice if cut off by a colonnade; for it could have been rendered useful as an upper lobby or aisle for occasional retirement from the heat and glare of the hall, when the thickest screen would be practically an advantage instead of an obstruction.

The fact that it would prevent any great quantity of light being brought from the west side, is of little consequence in St. George's Hall, where the architect was independent of the walls altogether for light, which could have been introduced in any quantity from the roof, and with the advantage over the adopted mode of lighting, not only of a simpler disposition and more concentrated flow, by having one great central light, but of leaving the west wall unbroken like the east, and rendering the symmetry of the room complete.

And while a greater array of columns would have rendered the interior more poetic and in better keeping with the outside, it would have increased the apparent size of the hall, which at present looks much smaller than it is—a result, however, arising not from the disposition or fewness of columns alone, but from the general treatment of the apartment, dictated, in a great measure, by the plan, the general conception of which, while it proves that the fancy of Elmes, like that of Wren, was too full of the "Templum Pacis," has left to the present architect, in its execution and carrying out, too little scope for grandeur, a quality which it is incumbent on an architect when the very expensive ingredient of magnitude is allowed him by no means to lose. I remember how, on entering the hall four or five years ago, before the ceiling or walls were plastered, or the columns erected, I was struck with the vastness and gloomy grandeur of the place, with its overspreading vault, itself a great triumph of constructive skill. I felt as if I were in an excavated mountain, or in some fabric reared by Cyclopean hands, and bequeathed to the service of the present. Other charms are there now—beauty has spread her enchantments—enchantments of no ordinary kind; but the majesty and grandeur springing from the original and unadorned form is lost, and architectural greatness has taken its flight.

Than the brass doors, on which symbolic animals, reeds, rushes, &c. most gracefully mingle, there could scarcely be anything more beautiful, either in design or execution; the shields and other devices, and artistic embellishments of the ceiling, are as gorgeously rich and elegant as could well be imagined, evincing great artistic resource on the part of the present architect; the galleries are tastefully and artistically supported; and the varied elements entering into the composition of the hall are combined into a harmonious and graceful whole, that is relieved by many really felicitous strokes of art, such as the Atlantes, for instance, which are fitly and beautifully applied to the support of the organ. But the whole is misplaced, for it is not in the spirit of the edifice of which it is the lining; I mean, of the exterior, of the grandeur of which too few and faint are the rays that have penetrated to the interior.

The rectilinear division and subdivision of the ceiling into distinct and similar compartments, are productive of much elegance; but they are fatal to the grandeur arising from its simple geometrical form. I do not object to the minuteness of the divisions into which the vault is broken: compartments of a ceiling may be as small as you like, but they must be wrought by grouping into *great* compartments, if they are to have any effect of grandeur. And even these must be arranged so as to avoid dividing it by straight lines either longitudinally or transversely. And while each is composed of a multitude of varied but related forms, they are all to have relation to each other; while the element of variety is still kept in veiw. Complete separation of the ceiling into parts is the great thing to be avoided; and I think some delicate decoration like diaper, covering the whole surface, analogous to texture in nature, would be preferable to many species of decoration in general use; as it could have no effect in disturbing the eye from the contemplation of the majesty and grandeur of general form. It could, of course, for preservation from monotony, be more or less relieved by detached ornaments, arranged on the principle above hinted at.

In conclusion, let me say that it is from no fault-seeking temper that I have dwelt thus long on the defects, or what I deem such, of this remarkable structure. While all its beauties may be justly placed to the credit of the architects, its blemishes are, for the most part, the result of untoward circumstances. The want of a vestibule, for instance, to the great hall, and other omissions of a plan in many respects ingenious, are attributable to the preclusion, by limitations and other difficulties of site, of that general outline of building which was alone capable of containing the right accommodation,* together with the discordant mixture of purposes to which the whole was dedicated. It is nevertheless important to the interest of architecture that the merits and demerits of an architectural achievement on which so many eyes are now fixed, should be clearly and impartially pointed out, in order to their being well and generally understood. So prone are we to imitate even the faults of what we admire, that knowingly to hide or suppress them in a review of the work, would be not only to degrade criticism, but to wound and betray the high cause of art.

SAMUEL HUGGINS.

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We append a plan of the upper floor of St. George's Hall, showing the Concert-room; and shall give some other illustrations shortly.

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## OBSERVATIONS ON THE PLANS FOR THE MAIN DRAINAGE OF THE METROPOLIS.

Two schemes for the main drainage of the metropolis are now before the Metropolitan Commissioners of Sewers.

One by Mr. John Roe, surveyor to the separate Holborn and Finsbury Commission, and late general surveyor to the Metropolitan Commissioners for the northern section of the metropolis.†

One by Mr. Bazalgette, Messrs. Bazalgette and Haywood, engineers to the Metropolitan and City Commissioners respectively, and by Messrs. Stephenson and Cubitt, consulting engineers to the Metropolitan Commissioners.‡

There is also another scheme, proposed by the late Mr. Frank Forster, chief engineer to the Metropolitan Commissioners of Sewers, in conjunction with Mr. Robert Stephenson, but which appears to have been kept in the background,—a studious reserve certainly not compatible with the great cost of its preparation, or consistent with the fact of its advanced state, contract drawings having been prepared for large portions, and three large parts having been let to contractors upon public tender;—or with the preliminary fact of its warm approval by Mr. Stephenson, its part designer, by the Metropolitan Commissioners and by the City Commissioners and their engineer, Mr. Haywood.*

Mr. Roe proposes two gravitating lines, the Hackney-brook, for the drainage of 7·12 square miles, and the middle level for the interception of the sewage from 27·8 square miles, and a low level line, taking 6·54 square miles, with a joint outlet at Barking-creek.

Messrs. Bazalgette and Stephenson, &c. have two gravitating lines, the Hackney-brock with an extension in a branch from Holloway to Kilburn, for the *complete* ordinary and flood drainage of 14 square miles; and the middle level from Acton to the Lea uniting with the high level by this river, for the drainage of 16 square miles; and a low level line of 11 square miles with the same joint outlet at Barking-creek. They have also a western section not included in Mr. Roe's scheme, for the collection of the drainage of 18 square miles by means of two (10 feet and 12 feet) sewers (with auxiliary flood outlets) into one sumpt near Chelsea, and its purification and subsequent discharge into the river at that point.

Mr. Forster has two gravitating lines in his northern scheme† (excluding the western district), the Hackney-brook and the middle level, and a main low level with branches; 25¼ square miles drain by gravitation, the greater part through the middle level; and 16¼ square miles by pumping power terminating in one outlet at Barking-creek.

Messrs. Bazalgette, Stephenson, and Cubitt's south scheme comprises a main gravitating line, with branches, and a main low level, with *one* branch at its lower end. Each level is to *drain* respectively twelve square miles, or a total of twenty-four miles, one moiety of which is pumped. The whole of the drainage and sewage of the twenty-four square miles is discharged by the town of Greenwich into the river Ravensbourne, at Deptford Creek.

Mr. Forster's south scheme, prepared jointly with Mr. Stephenson, consists chiefly of a low level main, with several branches, with lifting power and a discharge into the Thames at Greenwich Marshes, full two miles lower in the river than in Mr. Bazalgette's scheme, clear of, and far below the town of Greenwich, and with an alternative extension to below Woolwich. Floods were expressly and amply provided for by existing outlets, and by comparatively inexpensive diversions, included in the estimate of cost.

The details of the several schemes, so far as they can be collected from accessible documents, are as follow:—

For the northern section of the metropolis (excluding the western), Mr. Roe proposes to effect the work by *three* main outfall sewers, two 7 feet 6 inches, and one 5 feet in diameter, at an estimated cost of 753,081*l.* Messrs. Bazalgette and Haywood accomplish it by three main outfall sewers, 12 feet 6 inches, 10 feet, and 9 feet 6 inches in diameter respectively, at an estimated cost of 1,255,190*l.* or as revised by Sir William Cubitt, 1,627,000*l.*

Mr. Forster's (aided by Mr. Stephenson and Mr. Haywood), at an estimated cost of 1,080,000*l.* (The sizes are not stated, but they are believed to approximate to Mr. Roe's, as, indeed, may be gathered from Mr. Stephenson's evidence.) Making provision for floods chiefly by existing channels, all propose the *same* object over the same area; yet they give results respectively of 753,081*l.* 1,080,000*l.* and 1,627,000*l.*

On the south, Mr. Forster proposed (with provision for floods by existing outlets and practicable diver-

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* A general disposition of edifice, the block plan of which would form the letter T, would give three distinct limbs for the three principal apartments, a vestibule common to which could be had at the intersection of the two lines of building.

† Report, Oct. 25, 1854.

‡ Reports 1, 3, 6, 8, 17th Oct. 1853; Jan. 21, Feb. 25, May 15, Oct. 30, Dec. 11, 1854.

* Mr. Frank Forster's Reports, Surrey and Kent Drainage, Aug. 1, 1850. Northern Drainage, Jan. 30, 1851. Secretary's "Report upon the Works and general Proceedings of the Commission during the Year 1850, dated Feb. 10, 1851.—*Times*, Aug. 10 and 14, 1850; Feb. 1, 1851." Messrs. Bazalgette and Haywood's Report upon the scheme of the Great London Drainage Company, May 7, 1853, pp. 11, 12. Evidence Great London Drainage Bill, 3114-3157, 3184.

† Report, Jan. 30, 1851.

sions) one main circular 8 feet (or less) outfall sewer, with many *essential* branches, not included in Mr. Bazalgette's scheme, as a "complete and *perfect*" scheme, at an estimated cost of 241,297*l.**

For accomplishing precisely the same object on the same ground, Messrs. Bazalgette and Cubitt propose one 12-feet low level sewer, with one branch near its termination, and two 11-feet high level sewers, at an estimated cost of 1,250,000*l.*

Mr. Forster's southern scheme was the joint production of Mr. Stephenson and himself, aided, it is said, by the local engineering knowledge; and the northern scheme (that portion close to the Thames alone excepted), although not to the like extent, had a similar basis.

Both sections had the unanimous approval of the then commission, including some of the highest engineering talent in its ranks, and, as respects the north of London, of the City surveyor, and of the City Commissioners: extensive preparations were made for the actual execution of the works, contract drawings having been got out: three large portions on the south side (said to be some of the most difficult) were let to responsible contractors upon open tender, within, or near upon, it is said, the estimated cost; and, but for financial difficulties, these works, if not most of the others, would have been considerably advanced, if not completed to a large extent.

In the interval of the promulgation of Mr. Forster's and Mr. Bazalgette's drainage schemes, 1850-1, and October, 1853, some very important facts and opinions were elicitated by the Committee of the House of Commons, in evidence on the Great London Drainage Bill (June, 1853), from Messrs. Bazalgette, Haywood, Stephenson, and Cubitt.

These gentlemen, without exception, at *this* period underrate the importance of the main drainage of the metropolis, and of freeing the Thames from its pollutions. Messrs. Bazalgette and Stephenson would send another 1,000 miles of sewers into the river, whilst Sir William Cubitt would "make the Thames as it ought to be, a proper receptacle and *sewer*, to take away the filth of the metropolis and the surrounding districts."

Mr. Haywood differs from the medical men who hold it to be essential to the health of the metropolis to purify the Thames, and thinks that the effects (of the flow of sewage into the Thames), "have been excessively exaggerated," although, in his report to his commissioners, six months previously (Dec. 24, 1852), he says, "The total interception of sewage from the Thames has been a result now long and earnestly desired."

Mr. Bazalgette says, it is much more important to drain localities now requiring drainage than to purify the river by main drainage works; that 1,000 miles of additional local sewers, costing 2,000,000*l.* are required; that their discharge into the Thames would be an important advantage to the present drainage; and (with Mr. Haywood) that the evil of this drainage into the Thames has been excessively exaggerated; that it is not to be compared to the benefit which will be conferred on the public by the drainage into the Thames; that 2,000,000*l.* should be expended in local drainage before any money is laid out in a low level sewer, as it is much more important to drain those localities now without drainage than to intercept the sewers from the Thames; and that he would not recommend the expenditure of the money upon the interception of the sewage at the present time, nor until a very large expenditure, 2,000,000*l.* has been incurred in another way. He doubts the *practicability* of constructing a sewer below the level of the river; he is afraid the low levels *must* be drained into the Thames, "on account of the enormous size that will be required if it is to be connected into one drain;" says the districts below the level of the Thames would be better drained by having a drain sunk at a lower level than the river, "and pumping the contents, if you could take off all that falls from that district." "The pumping power is an enormous cost." He thinks the connection of a number of low-level sewers in the low districts a dangerous operation, because of the floodings from the main sewer; he cannot see how the flood waters are to be kept out of the lower tunnel. He thinks the sewers in the low districts should act as reservoirs, that "they should be so calculated that they will just contain the greatest quantity of water during floods." His opinion is that the rain-fall *must* be provided for in the main intercepting sewers, "unless you construct a fresh set of sewers all over those districts." He cannot see how the sewage is to be diverted from the Thames, *unless* the rainfall is provided for.

He chiefly grounds his opposition to the Great London Drainage Scheme on the small capacity of their sewers when compared to the quantity "which is to be provided for," or "that comes down." On the north, he says, the company take only 1-180th part, and on the south only 1-900th part of that "which is to be provided for," or "that comes down."*

His basis of calculation appears to have been a rainfall of 2 inches in the hour, upon, and its discharge within that hour, from an area of about 47½ square miles on the north, and 61½ square miles on the south.†

He puts the quantity "which is to be provided for," or "that comes down," at 3,600,000 cubic feet on the north, and at 4,770,000 cubic feet per minute on the south, or its equivalent, 900 by 5,300.

In June, he says,‡ "I find there is not an unfrequent occurrence that two inches of rain should fall in the hour;" but in October, '53, when reporting on the Surrey and Kent drainage, a scheme expressly designed to take *all* the *drainage* and sewage, he says, as an argument for his standard, "But storms, amounting to 2½ inches in a day, *although of rare occurrence*, have been recorded;" § *i. e.* that his maximum standard for one class of his sewers drops in four months from 2 inches to 1-200th part of 2 inches per hour; and his maximum standard (*vide* reports) for another class of his sewers, from 2 inches per hour to 1-200th part of 2 inches per hour.

He shows (p. 15) the insufficiency of the existing sewers for storm waters, and the consequent flooding of the lower districts; he justifies the sizes of his sewers, "larger than any heretofore recommended to the commissioners, by reasoning which directly leads to a capacity sufficient for, and which he says will answer every purpose;" he immediately proceeds to show that his sewers are sufficient to carry off the rainfall as well as the sewage; and yet he thereupon proposes that the existing main sewers in the low districts should act as reservoirs during extraordinary storms, after he has cut off all the upland drainage, constituting one-half of his entire area, reduced his standard of rainfall twentyfold, and applied this reduced standard to one-half, and a standard still further reduced to the other half of an area, less by 60 per cent. than that which he puts forth in evidence as the area for which provision requires to be made.

The following are Sir William Cubitt's opinions:—

Sir William thinks it unnecessary to prevent the sewage of the metropolis passing into the Thames, if proper means were taken to make "the Thames *as it ought to be, a proper receptacle and sewer*, to take away the filth of the metropolis and the surrounding districts."‖ Proposes to extend mouths of sewers by cast-iron pipes under low-water mark; "thinks no sewer should be made in a public street that a man could not walk into and clean out." Never knew a sewer too large yet. They cannot be less than 3 feet high (for entry of men to rake out and repair: 5 feet, or 5 feet 3 inches, and 3 feet 6 inches wide, is a very good sewer. "All you want of a sewer is to have a flat *bottom* of about 9 or 10 inches, made so that a man can step with his feet and work in comfort, which he cannot do in these circular sewers."

Whether we are to have a system of intercepting sewers or not, still that (extending the sewers to low-water mark) ought to be done?—Yes.

The intercepting sewers can be made at any time *if they are worth being made, but they ought not to be made at the cost and loss of time of the proper sewage.*

The great desire was to get rid of the impurities from the Thames? The public have talked a great deal, and have always done for the last thirty years, without knowing what they talked about; just as busy men set them about, and newspapers wrote to call the public attention to it. In his report on the report, plans, and estimate of Mr. Bazalgette for the drainage of the northern district of the metropolis, by means of the Hackney brook, or northern high level intercepting sewer (Oct. 13, 1853), he states that the scheme, although a portion only of the north of Thames drainage, is a perfect measure of itself, and, having most important objects to effect, *it cannot, in my opinion, be set about too soon.*

Page 8, strongly recommends the whole district "comprised in Mr. Bazalgette's report, extending from the Ranelagh sewer, in the Kilburn-road, on the west, to Old Ford, on the river Lea at the east, to be carried out at one time."

Entirely concurs in the principle and details of Mr. Bazalgette's report¶ on this (the Surrey and Kent) drainage (estimate excepted), which "is to *drain, take off, or intercept, all the rain water and sewage which now falls into the Thames from an area of at least 24½ square miles,—of one-half of which the rainfall can be intercepted and taken off by gravitation, but the other, the lowest half, would have to be pumped up.*"

Adverts to the pumping station at Deptford-creek as a most excellent situation for the manufacture of sewage manure, "*by* which means the sewage water would be deodorized, and delivered into the Thames divested of its most offensive and deleterious matters."

Page 24, "A circumstance which cannot, in our judgment, be too strongly impressed upon the *minds of those who are crying out* (and certainly *not without reason*) *for improved sewerage.*"

Page 24,—thinks the sooner the scheme is carried out the better.

Mr. Robert Stephenson (then a Commissioner, in conjunction with his eminent colleagues, Sir John Burgoyne, Capt. Vetch, Mr. Rendel, and Capt. Harness, a committee to whom the task was expressly confided) carefully studies 150 to 160 competitive plans for the drainage of the metropolis; and examines the greater part of London, with a view to its main drainage.* Thus prepared, he designs, in conjunction with Mr. Forster, the then chief engineer, and locally assisted, the southern drainage, mainly consisting of an 8-feet low-level sewer with branches, with express and ample provision for storm waters by existing sewers and practicable diversions, included in the estimate of 241,297*l.*

The *Times*, of 10th August, 1850, records his eulogy of this, as he expressed it, "complete and perfect scheme," in his place in the Commissioners' Court of the preceding day; his anxiety for its immediate execution, and the perfect unanimity of his eminent colleagues.

The plan of the southern drainage having received the sanction of the Court,† the nature of the ground having been tested by borings, and the detail plans, sections, drawings, and specifications prepared, advertisements for tenders of a portion of this work were inserted on the 22nd of November, and the tenders opened on the 3rd of December, 1850, and a tender for the completion of this work was conditionally approved; and shortly afterwards, two other large portions were similarly let. The works under these contracts would already (Feb. 10, 1851) have been commenced, and now be in active progress "but" for financial difficulties.

The northern drainage was approved by the Metropolitan and City Commissioners, by the City surveyor, Mr. Haywood, and with the exception before mentioned by Mr. Stephenson; but it was not carried into effect, because the Commissioners had no means of getting money.

Mr. Stephenson, in his evidence on the Great London Drainage Bill (June, 1853), whilst in one place he alludes to his recommendation to drain the low parts of the south side *first*, in another says, we ought to *begin* by intercepting the sewers above; that the lower parts of London would take care of themselves very well, that the lowest interception ought to be the last to be done.‡ Admitting the prolongation of the period of the pollution of the river, he thinks the best way is to look at what will be the best thing ultimately; and in the same breath he doubts the necessity for main drainage, and following Mr. Bazalgette, thinks the money would be better spent in improving the present system of drainage, leaving the main works to be carried out at some future time. But on 11th December, 1854, he says: "By almost universal consent, the time has now arrived when some remedy must be applied;" and he speaks of a river (when the stream is constant towards the sea) as "the most efficient sewer that man can avail himself of." Approving of Mr. Bazalgette's Hackney Brook scheme, he says, that it will be of scarcely appreciable effect unless followed up by designs of much greater magnitude; and at this period, he admits the urgent necessity for attending to the low parts of the south side.§ He subsequently approves with Sir Wm. Cubitt the "principle and details of Mr. Bazalgette's Surrey and Kent drainage scheme, which he says is to drain, take off, or intercept all the rain-water and sewage "from an area of at least 24½ square miles," of one-half of which the rainfalls can be intercepted, and taken off by gravitation; but the other, or lowest half, the greater part of which lies below high-water level, would have to be pumped up and delivered into the river at some point below London, say Deptford-creek, in the first instance, and subsequently at some point lower down the river, should such an extension be deemed advisable.

It would appear that at one time he had contemplated, or proposed an open intercepting sewer for this side.‖ In his report of 15th May, 1854, he thinks the North low-level sewer does not press for immediate attention, and that the construction of the upper and middle levels will render the low level comparatively less important, the middle level being now, in his opinion, one of the most important features of the scheme, no part being more effective—none can be so

* Evidence, June, 1853. 2582.

* Evidence, 2461—2066, 7, 8, 9, 70.
† Evidence, 2516, 7, 58, 71.
‡ Evidence, 2557.
§ Report, October 6, 1853, p. 20.
‖ Minutes of Evidence on the great London Drainage Bill, 1853.
¶ Report of the consulting engineers on the Surrey and Kent Drainage, Oct. 17, 1853.

* Return, Metropolitan Drainage, April 11, 1854.
† Secretary's Report, Feb. 10, 1851.
‡ Evidence, 3184, 3130, 3124.
§ Report, October 8, 1853, pp. 10, 11.
‖ Evidence, 3131, 2, 3.

ill spared or postponed. He recommends, because of the low levels, the collection of the west district drainage in one sumpt *within* the area, the purification of the drainage, and the discharge of the liquid residue into the river at this point; a system to which he saw "serious objections," when reporting on 8th March, 1850, in conjunction with Sir John Burgoyne, Capt. Vetch, Mr. Rendel, and Capt. Harness, the results of the examination of the competitive plans for the drainage of the metropolis.* Mr. Stephenson strikes at the root of every tunnel scheme, when he expresses his apprehension of the tunnel sewers silting up when floods master the lift, and check the velocity of the current. The illustration to his hand is the great London drainage tunnels, falling 4 feet per mile; his own tunnels fall at a much less rate, and would of course be still more open to this objection.

Sir William Cubitt, in August, 1848,† and June, 1853, thinks such tunnels impracticable, "to say the least," whilst in October, 1853, he proposes them. ‡

What are the opinions of eminent engineering contemporaries upon vital points? They have strongly varied.

Mr. Hawksley,§ instead of localizing the western district, would take it to Bar Creek. He would extend the southern sewer to Wandsworth. He would deepen the low level lines on both sides very considerably (he says 15 feet on the south); he would have his sewer below the Victoria-street sewer.

Messrs. Bazalgette, Haywood, Stephenson, and Cubitt, in their reports on the main drainage, fix the maximum rainfall for their sewage intercepting lines to take at ¼-inch equally spread over the twenty-four hours, or the one-hundredth part of an inch per hour.

Mr. Brunel would provide for ¼ an inch the twenty-four hours, or the one-fiftieth part of an inch per hour at the least.‖

Mr. Hawkesley would not provide for less than (1½ inch in the twenty-four hours or) one-sixteenth part of an inch per hour.¶

Messrs. Brunel and Hawkesley, both eminent engineers, are, therefore, at issue with the Commissioners' engineers on this *vital* point; the one would double the capacities for rainfall, the other would treble these doubled capacities, increasing the originals sixfold.

Sir William Cubitt approves of dealing with the sewage at several points.

Messrs. Bazalgette and Haywood suggest grave doubts of the expediency of arriving at a decision on their own scheme of main drainage, which the manipulation of the sewage may, as they say, hereafter either entirely set aside or greatly modify.**

In this confliction of opinion the Commissioners are required to accept their *immediate* predecessors' schemes, involving eight main outfall sewers, varying in size from 9 feet 6 inches to 12 feet 6 inches; steam-engines of from 4,000 to 5,000 horse power (*vide* reports); and an *estimated* expenditure of 3,000,000*l.* as contrasted with a scheme proposed by a former eminently engineering commission, including their present chief consulting engineer, costing 1,321,297*l.*

The 3,000,000*l.* should be increased to 5,000,000*l.* so as to include the 2,000,000*l.* for the 1,000 additional miles of local sewers said to be required, or rather to 8,000,000*l.* at the least, if the estimate is framed upon the apparent cost of their local sewers, namely, 1*l.* per foot; or full forty years' purchase of the present (gross) sewers-rates. Be it observed, these are only the *estimated* costs; that a further very large expenditure is contemplated in the shape of enormous reservoirs in the uplands, with lifting steam establishments by the Thames, for the purpose of cleansing these main and local sewers; that there must be a large expenditure in apparatus to work the cleansing process; and that there must be large establishments to work the steam power at each reservoir station, and at each station where the sewage is lifted; an enormous consumption of coal; many constant repairs and continued depreciation, involving a very large additional immediate outlay to the above 5,000,000*l.* as they put it, or 8,000,000*l.* as it (more nearly) would be, and a very costly current expenditure.

After all this prodigious contemplated outlay, these enormous main sewers, as well as the local sewers, are acknowledged to be most imperfect works; for in his place in court, at one of the very latest of the late Commissioners' assemblies, Mr. Hawkshaw, a very eminent engineer, expressed his full conviction (a conviction apparently concurred in by his colleagues) that the sewers, especially the main and intercepting sewers, would not be kept in a proper state of cleanliness unless very large quantities of water were passed through them from large elevated reservoirs, supplied by steam power, lifting from the Thames; an admission of the evil of interception upon the lower parts of the sewers from which it cuts off the flow, leaving the channels comparatively dry; but dry with noxious filth, rapidly causing accumulations of deposit, and ultimately, if not constantly seen to, choking up the sewers, and an admission of the reactionary effect of enormous sizes and small falls on an otherwise adequate intercepted flow. Evils to be inflicted, as on the south side, by a sixfold greater capacity, and a fivefold greater cost, as in Mr. Bazalgette's scheme, as contrasted with Mr. Forster's.

A slight examination of that 2-inch in the hour rain fall and discharge theory (one of Messrs. Bazalgette and Stephenson's chief grounds of opposition to the Great London Drainage Scheme) is of some importance in the consideration of the main question. On their southern area, this fall and discharge produces, as they state it, about 4,770,000 cubic feet per minute. On their northern area, of 3,600,000 cubic feet per minute,—or in the whole 8,370,000 cubic feet per minute—220 of their 12-feet low level sewers would discharge 4,700,000 cubic feet per minute on the south. Imagine a 12-feet sewer of theirs ranged at about every 60 yards along the southern margin of the Thames, or between Vauxhall-bridge and Deptford-creek, and disgorging its contents, and this will give a literal idea of that 2-inch in the hour fall and discharge, producing on the 6½ mile area on the southern side, 4,770,000 cubic feet per minute.

Take the 8,370,000 cubic feet per minute on both sides of the metropolis, and compare it with the standard of the (stated) Thames flow at Teddington lock in summer weather, of three million cubic yards per diem, or 56,250 cubic feet per minute,* and the equivalent of that 2-inch hourly fall and discharge, will be this Thames flow 148 times repeated. Double the standard, so as to avoid a chance of over statement, and the 2-inch fall and discharge are still seventy-four times in excess; and this is the proportion nearly of that fall upon the south, as compared with the capacity of the three sewers for that part, designed for taking twenty times less rate of rainfall on sixty per cent. less area than the promoters' respective standards of June, 1853. Followed out to its legitimate consequences on the whole area of the Thames basin, the reasonings of the Commissioners' engineers would lead to the most extraordinary results. For when applied to, probably, a fiftieth part of that basin, it repeats the Thames flow 148 times, or shows that you have had, and that you may expect to have occasionally on this fiftieth part of the Thames basin, on this section of the metropolitan area, falls of rain and like discharges within one hour, equal to 148 times such rivers as the Thames !†

The ultimate bearing of the hypothesis of the 2-inch hourly fall and discharge, is this:—

1. That over the whole area the fall is equal.
2. That all areas like in superficies discharge the fall at equal rates and in equal quantities, whether they may be composed of dense towns or of open country, whether they may be absorbent or non-absorbent; whether they are hills or flat marsh land; and that the sinuosity and length, and fall of the discharging channels, are indifferent.
3. That the discharge of the whole quantity is effected exactly as it falls, or instantaneously.

We desire that our observations may be taken in good part: we have but one desire, and that is to assist in determining on the best course. The statements we have contrasted, show how difficult it has been to arrive at correct opinions on thsee subjects. We may have something to say on Mr. Roe's scheme, and the report upon it, hereafter.

## A NEW SYNAGOGUE IN LONDON.

THE Jews have built a new synagogue in Great Portland-street, Oxford-street. The interior has a large enriched dome, rising from four Corinthian columns, with groined and coved ceilings on each side. The ark has damson-wood doors and gilt mouldings, with scagliola columns, and is approached by marble steps. Mr. Clarke, of Fenchurch-street, was the architect; and Messrs. Clever and Stanger, the builders.

THE CEMETERIES AT HANWELL.—The chapels in the cemetery for St. George's parish, and the chapel in the Kensington cemetery, both at Hanwell, are approaching completion. Messrs. Higgs and Cullingford are the builders.

## CHRIST CHURCH, CRAVEN-HILL, BAYSWATER.

THIS church, now in course of erection, is situated on the north side of the Bayswater-road, opposite Kensington-gardens, on land formerly occupied by Hopgood's Nursery, and which is intended to be laid out for building houses, of the same class as Hyde-park-gardens. The estate has been so planned as to place the church in the middle of a square, and the approach from the Bayswater-road will be by handsome entrance-gates and lodge through a road 100 feet wide. The style of the church is the Decorated. The building consists of nave, aisles, and transepts, with porch, chancel, and adjoining aisles, and lofty tower and spire at the south-west corner. The nave is 113 feet 3 inches long, divided into four bays, besides the large arches across the transepts, and 26 feet 8 inches wide in the clear between the shafts of the columns. The width of the aisles on each side of nave is 15 feet 10 inches, and the total width of the church is 63 feet. The length across the arms of transepts is 91 feet in the clear, and the width is 26 feet.

The chancel is 32 feet long by 24 feet wide: the aisles on each side are 18 feet 9 inches long by 15 feet 6 inches wide, one being used for a vestry, with the organ chamber over, the other arranged for sittings. These aisles will be separated from the chancel by rich wainscot panelling and stalls. The church is lofty and large, and promises well internally.

The tower and spire rise from a square base, about 25 feet 6 inches external dimensions: the tower is to be terminated by perforated battlements, and angle pinnacles, with enriched flying buttresses to spire.

The spire is crocketed, and has three tiers of dormers: the total height of it to summit of vane is to be 205 feet.

The church is faced externally with Kentish rag stone, laid in even courses: the dressings, windows, columns, arches, and other details are in Bath stone.

The roofs are of lofty pitch: that for the nave is equilateral with carved hammer-beams, and open tracery fillings-in: that for the chancel will be panelled, with moulded ribs, and carved bosses at the intersections. All the windows in the chancel, and probably the large window at the end of nave, will be filled with stained glass, by Wailes, of Newcastle. The chancel will be paved with Minton's tiles. The pulpit and reading-desk will be of wainscot.

There is no gallery at the end of nave, but the side galleries, which are unfortunately necessary to obtain adequate accommodation, are arranged to interfere as little as possible with the effect of the interior, by being kept clear of the nave columns. Those in the transepts reserved for children, are approached by separate staircases, and do not project beyond the aisle walls.

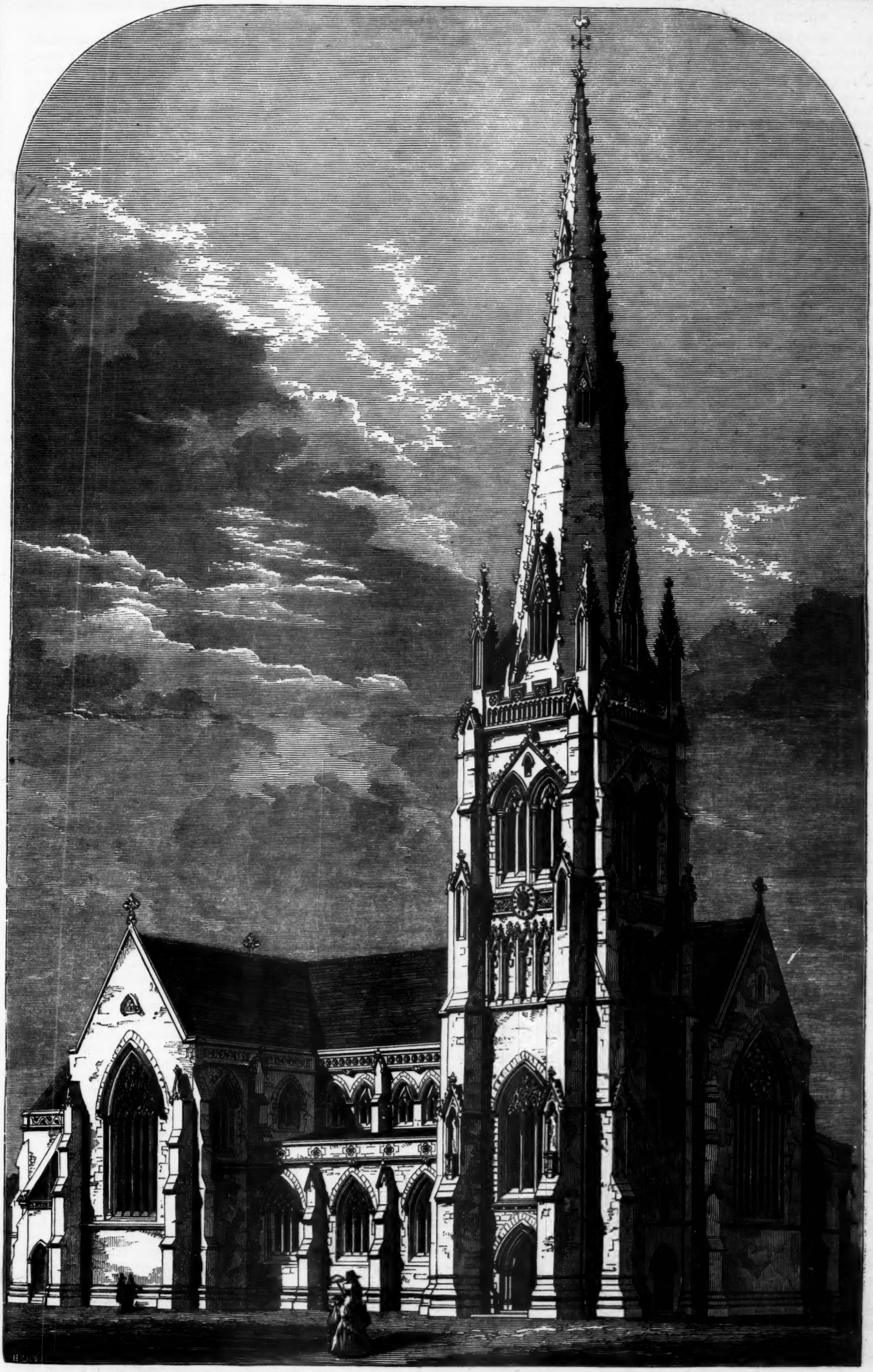
The fittings will be of deal, stained, the seats in the central passage having stall ends, terminating in carved finials.

The church will accommodate 1,600 persons, including children. Mr. Myers, who is the contractor, is bound to complete it ready for consecration by the first week in June next. The belfry stage of tower and the spire, are to be reserved for subsequent erection. The total cost of the church, exclusive of the works reserved, will be about 14,000*l.* The architects are Messrs. F. and H. Francis.

THE SCOTTISH NATIONAL ART GALLERIES AND THE ROYAL SCOTTISH ACADEMY.—A correspondence has been published in the Edinburgh papers relating to the purposes of the new art galleries on the Earthen Mound at Edinburgh, as to which some doubts are said to have of late existed. The correspondents were Sir John Watson Gordon, the president, and Mr. D. O. Hill, the secretary of the Scottish Academy, on the one hand; and Sir William Johnson, late Lord Provost of Edinburgh, on the other. One of the letters is addressed by Mr. Hill to the Hon. B. F. Primrose, secretary to the Board of Manufacturers, and requests the Board, on the part of the president and council of the Academy, to keep in view that one-half of the new buildings are required by the Academy.

* Metropolitan Drainage Return, p. 106.
† Report on City Sewers, 1848. Evidence, 3415 6.
‡ Report on Drainage north and south of Thames.
§ Evidence, 2779, 85, 6, 7, 8, 9, 91, 2845, 2885, 6, 7, 8.
‖ Evidence, 3319, 20, 30, 1, 2, 3, 4.
¶ Evidence, 2880.
** Report, Jan. 21, 1854, p. 90.

* A short Description of Capt. Vetch's Plans for the Sewerage of the Metropolis. Wild, 1851, p. 15.
† At Teddington Lock in summer weather, as before.



CHRIST CHURCH, CRAVEN-HILL, BAYSWATER.——MESSRS. F. AND H. FRANCIS, ARCHITECTS.

## ARCHITECTURE.

A POEM.

WHAT great power doth waken feeling
In your columned hall, so high?
Is it the dim shadows stealing
Into deeper mystery?
Or the golden sun revealing
Forms of light and symmetry?
Is't the vernal hand of Time,
With his choicest tints adorning?
Or the vapours of our clime,
Crowning with the dews of morning?
Many a tale doth hang thereby;
Many a knightly battle-cry,
And deed of ancient chivalry,
Its echoing stones could tell.
Often has the passing bell,
From yon high, enriched tourelle,
Smote, with dismal, solemn swell,
On the 'nighted wanderer's ear,
Waking many a dreadful fear
Of the fiend's unholy yell;
Or sheeted ghost from off his bier,
Rising slow with intent fell.
O'er the time-worn battlement,
With green lichens thick besprent,
From the storied oriels,
That o'erlook the silent dells,
Where the peaceful herdsman dwells,
Many a joyous face has peered,
Many a witch has wrought her spells,—
Witchery unwrought by weird,
But often worked by fair damsels.

Now, no more the laughing tide,
Issues from the portal wide,
Fall'n, the grim portcullis,
Level is the deep abyss.
Whither are the waters fled?
Would'st thou know? go ask the dead!
Yon their effigies do lie,
Calmly gazing up on high,
Ever fixed upon the sky:
Midst the sunshine and the rain,
Evermore they rest the same.
Dost thou seek for peace of mind?
Still look up and thou shalt find:
If the golden crown thou'dst win
Spurn the gilded toy of tin.

Not in olden legends lie,
Nor in beauteous symmetry
The spirit-moving power;
But in thoughts that never die—
Thoughts that have their birth on high
In a holy hour.
'Tis the soul of him who wrought:
From his mind so richly fraught,
Sprang the noble tower.
Though we do not hear his name
In the trumpet blast of fame,
Resounding evermore;
Yet his might is still the same—
Still the ringing links remain,
As in days of yore.
Often does the clanging chain,
In the wanderer's rapt brain,
Its thrilling echoes pour.

Wist we not who raised on high
Egypta's spectral pyramid,
Where old Nilus rolleth by,
'Neath the flowing lotus hid,
Midst the flaming, orient sky,
And the simoon's onward skid?
Myriads of mighty phantoms,
In those Titan caverns lie,
Phantoms that with glassy eye,
Seem the keepers of the tombs.
Once they danced upon the spot,
Now their memories are forgot:
Nought the sceptre and the crown,
And the purple 'broidered gown;
Nought the king and nought the man,—
All is nought since earth began,—
Save the heaven-inspiring thought,
In the stones so nobly wrought.

So on Rome's imperial heights,
And at Athens, desolate,
Still the spirit's feeling lights
Temple's brow and triumph gate:
Still a history remains,
Free from history's foul stains.

So in each cathedral pile,
That sheds a radiance on our isle;
Where the cross uplifted high,
Teaches manhood how to die;
Where each stone with face so fair,
Wrought with workmanship as rare,
Murmurs soft to passers by,
Telling how religion's power,
Can transform the savage hour,
Unfire the wrathful eye;—
There! within those holy walls,
Seated in the carven stalls,
Listen to the choral sound,
Echoing in aught around;
Through the mighty, arching nave,
And the dim triforium,
Reverberating wave on wave,
List unto its pendulum.
Then look up, and unto thee,
The stones shall soothly speak,
In voices low and meek,
As murmurs of the sea:
Everlastingly and deep,
To thy inmost soul they creep,
Beguiling thee in tears to weep,
For thy sin and for thy sorrow,
Making holier the morrow,
And teaching thee in stones to find
Purity and peace of mind.
He who says that Art is dead,
That her vital light is fled,
Says not well.
Style is but a robe, in which
Necessity's cold forms t'enrich
As in a shell:—
Thus religion erst hath been
In olden times, a mother queen
At Egypt and at Rome,
And in our island home:—
Thus beneath her watchful eye,
Guided by necessity,
Art has ever grown:
Now escaped the leading string,
Nought doth check her soaring wing,
She may float in realms of light,
Spacious as the womb of night.

Art! a spirit! cannot die,
Though she pass from human eye,
Though within the sombre tomb,
Buried 'midst an age's gloom;
Yet again the soul shall rise,
And raise a temple to the skies,—
Not as they of old did build
In necessity's frail bound,
Nor by form to order drilled,
But from a foundation sound,
Built upon eternal mind:
Grandly shall her towers upspring,
And all peoples rest shall find
'Neath the shadow of her wing.

Once again the time is come,
From a darksome sleep has sprung
Our beauty-moving art:
Once again in might renewed,
Are the stones with life imbued,
By the master's heart:
Fashioned perfectly each part,
Science laid as in a chart,
From the threshold of earth's sod
Up to Heaven's gate,
Nearer still to Heaven's God,
Raise we our estate.

He who builds the surest now,
He who wears the purest brow,
Scattering flowers everywhere,
Will therein have joy, I trow,
To be crowned with honour there.
All are workers, none may idle,
All have power to wield the bridle,
And to guide the wayward steed
Through life's thorny, chequered mead.
All can build, but they do best,
Who build beyond earth's sombre crest;
Building not for shining gold,
That perishes when life is cold;
But building Wisdom, Truth, and Love,—
A Babel to the realms above.

Thus, O man! to build aright,
Build with poets', painters' might,
Build with love and calm delight.
Stamp each stone with earnest feeling;
In the rock thy soul revealing:
Cast aside all worldly dross:
Purify thee from its floss:
Nought is there of poor degree,
But thy mind and fancy free,
Can enrich its quantity;
Nought of baseness, nought of earth,
But thou mayst increase its worth.
Yon Sierra's snow-clad height
Is not gained at a single flight;
Nor with nerveless step and slow,
Wilt thou reach its alpine brow;
But with steadfast, earnest soul,
Thou mayst win high Heaven's goal.

W. G. BEAVAN.

## DOINGS AT THE METROPOLITAN BUILDINGS OFFICE.

OUR London readers at all events are aware that for some time past differences have prevailed between the official referees and the registrar of metropolitan buildings, which have greatly impeded the proper execution of the law, have tended to bring it into disrepute, and have increased the difficulties of the district-surveyors. The operation of the differences of opinion is, that on considering the decisions come to by the referees, the registrar conceives in various cases that they have proceeded erroneously, and refuses to seal their awards. When sent to the Board of Works, the Board sometimes authorise the registrar to affix his seal of office to the intercepted documents thus overruling his objections, but more commonly confirm his refusal of the seal, and the whole of the litigation is thus suspended. The Board of Works have at times intimated to the referees, that it was their duty either to alter the already executed documents, or else to make others, but the referees felt they could not do so. The latter offered, however, to record any decree avowedly on the responsibility of the Board of Works acting as an appellate court, but this was declined.

In party wall cases, of great importance to individuals, a special difficulty was found. Unless there is error on the face of the certificate given by the district surveyor, or an appeal is brought by one of the parties, its confirmation by the official referees is a matter of course, and they consider there should clearly be no hearing of the parties on it. But the registrar thinks differently, and withholds the seal from certificates of confirmation on that ground, although if the parties did appear, and the official referees heard them, the decision of the official referees is made final by the 24th section.

Under these circumstances the referees thought it necessary to obtain the opinion of counsel, and a case was prepared and submitted to Sir Richard Bethell, Solicitor-General, Mr. Serjeant Byles, and Mr. Charles Winston. The question mainly was as to the nature of the control over the acts of the referees vested in the Registrar and the Board of Works; and we give so much of their reply as answers this. The remainder advises as to the mode in which the referees should take the opinion of a Court of Law upon it:—

"We are of opinion that the instruments required to be sealed under sec. 89, are of two classes.

First. Certificates, summonses, and consents granted by the official referees, and expressly *required to be sealed*, by secs. 15, 16, 85, and 117.

Secondly. An award when it is proposed to enforce it by process from the Court of Queen's Bench (sec. 83), and a copy of it when wanted for evidence (sec. 86).

Over the first class of documents, the Registrar and the Commissioners have a controlling power. The Registrar may refuse to affix his seal of office, where on the face of it the document appears to him contrary to law, or where it is informal, or manifestly *ultra vires*. The Commissioners may review the Registrar's decision, but must proceed on the same grounds.

But over the second class of documents, viz.—awards and copies of awards, we are of opinion that neither Registrar nor Commissioners have any controlling power, but that the duty of the Registrar to fix the seal is purely ministerial.

We are further of opinion, that upon a submission to the referees in their judicial character of a question between party and party, as soon as they have once made their award, they are *functi officio*. That they can neither make a second award, nor (which is really the same thing), alter their first award; and more than that, we think it would be very dangerous for them to attempt it, for in an action for damages for acts done under the authority and direction of an altered award, they might be unable to shelter themselves under the protection of the Act of Parliament."

Difficulties have increased instead of lessened, and render some immediate steps imperative. We do not desire here to judge between the

referees and the registrar, but we are bound by our duty to the public, which we have never knowingly shrunk from, whatever might be the personal risk, to declare that the present condition of the Office of Metropolitan Buildings is a discredit to the country, seriously inconveniences a large number of persons, and tends to bring the law and the administrative powers of the kingdom into disrepute. An inquiry ought immediately to be instituted with the view of either making clearer the duties of the two departments, or, if these duties be already clear, of superseding those who will not perform them in good faith, and work harmoniously with their coadjutors in the office.

## PROVINCIAL NEWS.

*Battles (Essex).*—At the recent quarter sessions for Essex, a letter was read from Messrs. Low and Blount, who had prepared the plan for Battles bridge, stating that, in consequence of the rise in the price of labour and other matters, they had not been able to obtain a contractor at the sum stated, but Messrs. Cottam and Hallan would take it within 60*l.* of it: they had also in consequence prepared another plan on girders and iron columns at a cost of 1,200*l.* It was proposed to accept the tender for the erection of the bridge at 1,560*l.* the idea of the other, at 1,200*l.* apparently not being much entertained; but it was stated that there was nothing in the offer to make it binding. It was resolved, therefore, to refer the matter back to the committee, to consider it, obtain tenders for the erection of the bridge, and report.

*Rochester and Chatham.*—The opening of St. Margaret's new National Schools took place on Thursday in week before last. The buildings comprise a boys' and girls' school, the former 50 feet in length by 18 feet in width, the latter nearly the same length, with the addition of a class-room: the schools communicate by folding-doors. There is also an infant school-room, with residences for the master and mistresses. The cost of the erection of the premises is 1,400*l.* of which 500*l.* were obtained from the Committee of Council on Education, and 100*l.* from the National Society, 800*l.* having been raised by subscriptions. The site and a portion of the buildings were conveyed by the parish for educational purposes, which lessened the sum required (3,000*l.*) The building was erected by Mr. Spicer, of Strood, from plans furnished by Mr. M. Bulmer, architect.

*Bristol.*—It is said that a peremptory order has been received by the local authorities of this city from Lord Palmerston, requiring them to at once erect a new asylum for pauper lunatics, at a cost of 20,000*l.* at least.——At a preliminary meeting, held on Monday week, the mayor in the chair, it was resolved forthwith to take measures for the formation of an association for the improvement of the dwellings of the working-classes in this city. The bishop convened the meeting, and announced his intention of taking shares to the extent of 250*l.* Mr. Daniel Cave promised a like sum. The Mayor, Mr. R. P. King, Dr. Symonds, and others, entered their names as shareholders; and in all, shares to the amount of about 1,000*l.* were taken. It was remarked by the bishop, that he knew no point on which such complete unanimity of feeling prevails among all parties as that of the necessity of improvement in the dwellings of the poor.

*Aberystwith.*—The old town-hall has been pulled down, and plans and specifications are being prepared for a tower, to be built on the site, with a town-clock. The commissioners have fixed upon a spot near the meat-market for erecting a building for commissioners' meetings and other public purposes, but principally for having a fish-market beneath it.

*Liverpool.*—"Briscoe's New Hall," Oldhall-street, is now "reared," and ready for the roof, and will be complete for occupation early in the spring. The buildings are situate about 200 yards from the Exchange, adjoining the Old Hall, and are intended for merchants' offices. The style is Italian. Mr. Culshaw is the architect. The proprietor of these buildings, according to the *Journal*, must have expended not less than 15,000*l.* on this property. The tradesmen celebrated the rearing by dining together at the White Bear Hotel, Dale-street.

*Doncaster.*—The local *Chronicle*, in speaking of the new streets and numbering of houses at Doncaster, says, "The new part of the town is, we observe, fond of aristocratic names; and, although new houses have recently sprung up without any principle, social, sanitary, or architectural,—just in the way that we have read of in the cases of San Francisco and Melbourne,—and even in some instances before proper measures were taken for a supply of water, road communication, or removal of refuse, there is a strong feeling to perpetuate the names of some of our leading noblemen. But our principal object is to call the attention of the Board (of Health) to the fact that an order was made some time ago, that the whole of the houses in the town should be numbered. This work seems to have been suspended."

*Shields.*—The *Sunderland Times*, in a paragraph, titled, "What will be done in Shields in 1855?" says, St. Hilda's Churchyard, South Shields, Christchurch-yard, North Shields, and the burial-place in Tynemouth, will be closed. A system of sewerage will be carried out in North Shields. The same in South Shields. The foundation-stone of the magnificent docks at Jarrow will be laid. The piers at the harbour mouth will begin to rear their heads above the German Ocean; and Jarrow, Howdon, North Shields, and South Shields, will be joined together by a bond of swift running steamers. The foundation-stone of the Sailors' Home will be laid at North Shields this spring, and the building will be covered in by the end of the year. South Shields will begin to build a new town-hall, and a much needed public room for herself; and the members of the North Shields Mechanics' Institution will abandon their disputes, and lay the foundation-stone of their public building.

*Penrith.*—It has been resolved here to appoint a provisional committee to obtain information as to a site for baths and wash-houses, and to draw out a prospectus, &c. to lay before the inhabitants. The project is to be carried out by shares not exceeding 1*l.* each.

*Aberuthven.*—Gasworks are spreading over the whole of Scotland. One has recently been opened in the village of Aberuthven. The mason-work was executed by Mr. James Stevenson, of Aberuthven, and the iron-work by Mr. John Douglas, of Cupar. The number of burners for which the work is erected is estimated at from 300 to 500.

## CHURCH-BUILDING NEWS.

*Skellingthorpe.*—On Wednesday in last week, in celebration of the covering in of the new church of St. Lawrence, at the village of Skellingthorpe, near Lincoln, a supper was provided at the Stone's Arms Inn, to which the whole of the workmen engaged in the building were, by Mr. Wm. Huddlestone, the contractor of the works, invited. Supper was partaken of by upwards of sixty persons. The new church is in the Early English style, built of Lincoln stone, with Ancaster dressings, and covered with Staffordshire tiles, with crested ridge. The church consists of tower, nave with four arches built upon inverted arches, north aisle with four lights, south aisle with three lights, and south porch. The nave is 48 feet long by 15 feet 9 inches wide, and the aisles are about the same. The chancel is 32 feet by 16 feet, with vestry 10 feet square on north side of chancel, and heating vault underneath. The roof is of fir, the principals of which consist of an arched brace, supported by a stone corbel. The whole of the roof is boarded down, and is intended to be stained and varnished. The interior of the nave and aisles will be fitted with open benches, stained and varnished, and the floors will be laid with alternate black and red Staffordshire tiles. The pulpit, according to the *Lincolnshire Chronicle*, will be built of Caen stone. The chancel fittings will be of oak, and the floor will be paved with Minton's encaustic tiles. Messrs. Kendall and Pope, of London, are the architects, and Mr. Wm. Huddlestone, of Lincoln, is the builder. The foundation of the new structure was laid in September, and it is believed it will be ready for Divine service in April.

*West Bromwich.*—A large stained-glass window, in memory of the late Earl of Dartmouth, has recently been completed, and placed in the east end of the old church here. It occupies nearly the whole of the space over the communion-table. The window is in three compartments. In the first, or centre compartment, "the Ascension" is represented. The "Dove," emblematical of the Holy Ghost, is the most elevated figure: then follows that of the Redeemer, supported by angels on each side, while beneath are the two Marys and eleven of the Apostles, in varied attitudes. Beneath this representation the stork (as an emblem of the church) is depicted, feeding her young ones. The side windows are floriated. The one on the left exhibits a scroll, enveloped with flowers and geometrical figures, bearing the words,—"It is sown in corruption: it is raised in incorruption. It is sown in dishonour: it is raised in glory." Intermediately in this sentence is a shield bearing his lordship's family arms. The right-hand side window is of similar pattern. The scroll, on this side, displays the words,—"It is sown a natural body: it is raised a spiritual body. It is sown in weakness: it is raised in power." Beneath the whole, in Saxon capitals, appears the dedication. The window is the result of a public subscription. The work itself has been furnished by Mr. Wailes, of Newcastle-upon-Tyne.

*Smethwick.*—The design for the new Wesleyan Chapel here is intrusted to Mr. G. B Nichols, architect, who is preparing the necessary plans for its erection.

*Stonehouse.*—The parish church, which has been closed for a year and a half, for the purpose of undergoing complete repair and restoration, was opened for divine worship on Thursday week. The old tower remains, and is of a plain square Perpendicular style. The new part of the church is also of the Perpendicular style, consisting of a nave and two aisles, and a small chapel or organ-chamber at the east end of the north aisle. The exterior of the church is very plain, and though quite out of proportion with the old tower, this is said to have been unavoidable, as the funds would not permit the rebuilding or raising of the latter, and the church was required to be of its present size, viz. to accommodate 464 persons. The whole of the seats are open, and of Riga oak, simply carved. A large proportion of the seats in the nave are free. The east end of the chancel has a window, corresponding with the general style of the building, and of stained glass, representing the various passages in our Saviour's life. It was executed by Wailes, of Newcastle. This, together with the north and south window of chancel, and the western tower window, also of stained glass, are gifts of the Rev. Thomas Peters, the rector of Eastington. The original Norman doorway, which stood on the north side of the old church, has been retained, as a relic of the old edifice, and stands as nearly as possible in the same position as before, forming the northern entrance to the present church. The dimensions of the building inside are 62 feet by 45, exclusive of the chancel, which is 22 feet by 18. The roof is open timber work, and the height from floor to apex of nave or centre roof is about 40 feet. There is a western entrance under the tower, divided from the church by a carved oak screen of open woodwork, glazed with plate glass: this is under the tower arch. The whole cost, including all expenses, will be about 2,000*l.* raised by voluntary contributions, but still short by some 300*l.* or 400*l.* Mr. Henry Crisp, of Bristol, was the architect employed, and the contractors were Messrs. Wall and Hook, of Rodborough.

*Halifax.*—A large field has recently been set apart by Mr. E. Akroyd, of Bank Field, for the purpose of forming a burial-place, more especially intended for the accommodation of the residents in North-ward, Old-lane, and Newtown. The ground measures about 16,940 square yards. Nearly 3,500 yards will be appropriated to walks and shrubberies. The ground will be laid out according to plans proposed by Messrs. Mallinson and Healey, architects. A chapel will be built in the centre, and the place will, it is said, in point of finish, not be left behind the cemetery already at the other end of the town, in Lister-lane.

## WAR APPLIANCES.

IT is to be hoped that the present vital struggle with despotic barbarism will once for all render war impossible, by maturing its deadly energies beyond all human endurance or resistance; and this can only be done by the more enlightened and inventive portion of the human race, and hence by those who ought to acquire the mastery. It may be, however, that the present pretence of suing for peace on the part of the Czar, is only so far sincere as to lead to the patching up of some sort of mutual understanding which may stave off the evil day; although it is but too likely to be another of those sinister devices by which cunning will only overreach itself, and undeceive others, in the end. Meantime inventive genius is aroused to martial projects, and every day almost reveals its mental workings towards one grand end, the rendering of warfare too deadly to withstand. One sanguine projector has devised an "electric rifle," to throw 100 bullets a minute, or 6,000 an hour, with a precision and force not yet attainable even with the aid of our good ally, the Minié. Another has invented a double cannon, which will simultaneously propel two chained balls in such a way as to radiate asunder, and stretch the chain to its utmost length, sweeping down whole columns or regiments at once. This gun has actually been tested in Battersea-park, it appears, to the "great satisfaction of all who witnessed its work." A chain of 60 feet in length, is spoken of as practicable with a gun and balls of proportionate calibre. A new sort of ball has been invented, named the belemnite, which is wedge shaped, and will, it is said, very speedily penetrate and overthrow stone walls instead of merely bruising them and dropping to the ground as the ordinary round ball does. Belemnite shells are also spoken of, which will add explosive force while so fixed in the fortification walls. The effective Minié principle applied to cannon, is said to be at present under consideration of the Board of Ordnance. Windage is thus to be got rid of, and the full force of the explosive power made effective by means of expanding leaden rings and conical plugs behind the conical pointed balls in the rifled cannon. Gunpowder itself is likely after all to be superseded by gun cotton, which the Austrians are said to be successfully substituting for it in the working of ordnance. A Mr. A. C. Smith has invented a new projectile power, which he calls the "lightning projectile," and which is based on the expansive force of the aqueous gases, brought into play, or fired, by electricity. Mr. Smith's inventions are actually said to be in course of adaptation to ordinary cannon at Woolwich. The power thus evoked is declared to be more than one and a half greater than that of gunpowder. The "lightning projectile," is likely to beat the steam-gun hollow, if all be true that is said of it. A new steam cannon, by the bye, is being founded in France, on an old invention, said to be described in a MS. by Leonardo da Vinci, and dated 1490, extant in the archives of the French Institute! Many other schemes are offered to, and some are under consideration of, the French Government. Besides those of our own countrymen already alluded to, we may add that a cannon of wrought-iron, or cast-steel, has been invented for field purposes, by Mr. Williams, the contractor for Government works at Milfordhaven, to be carried to the field in pieces, on men's shoulders, and put together in a few minutes, so as to be stronger than any gun cast or fabricated in one piece. In this way also, doubtless, any weight, as mere *vis inertia*, required for the recoil, could readily be applied.—— The electric telegraph cable to be laid in the Black Sea, between Varna and Balaklava, was made by Messrs. Newall, according to the *Gateshead Observer*, in a month's time, or 100 miles a month, and was to be dispatched on 14th inst. in a screw steamer built for the purpose, in about the same period of time!

## INSTITUTION OF CIVIL ENGINEERS.

THE evenings of Dec. 12th and Jan. 9th, Mr. James Simpson, president, in the chair, were entirely devoted to the discussion of Mr. P. W. Barlow's paper, "On some peculiar Features of the Water-bearing Strata of the London Basin." It was contended, that the sands underlying the chalk would be found the most certain sources of water supply. The conditions of the strata at Grimsby were different from those of the London basin; and in the latter locality, some years ago, in any well of moderate depth, water was certainly met with, whereas at present it was only found at considerable depths, and was only obtainable by great pumping power. The water was now chiefly found in the fissures and flint beds, and but little in the solid chalk, beyond that held in suspension, and which it was difficult to extract. Water might be found in sufficient quantity, in the chalk, for the supply of two, or three, suburban parishes near the metropolis; but the conditions were very different from those of London itself; and it was strongly contended, that it was illusory to trust to any such source for a large supply by Artesian wells. It was admitted, that water was obtainable from chalk, chiefly, if not entirely, by infiltration through the fissures, and the layers of flints; and that although chalk was a rapid absorbent of moisture, it did not readily part with it again, nor in its normal condition would it afford a free passage for water, therefore it could not be correctly denominated a water-bearing stratum; whereas sand could be correctly so termed. The chalk was, however, in certain districts, so intersected by fissures, and had such numerous layers of flint, that practically the effect of a water-bearing stratum was obtained; and hence the excessive pumping from one well would affect all around, as also the sources of the streams. Sand was, on the contrary, essentially a water-bearing stratum; the facility of yielding moisture depending generally on the size, and therefore the collective compactness, or openness, of the grains. It was as susceptible of saturation as the chalk, but not as capable of retention of moisture. In some districts, the lower tertiary sands were mixed with clay, which interrupted the flow of water; whilst in others, they afforded a free passage. It was mentioned that the lower green sand stratum had been reached in the Hampstead well, at a depth of 1,150 feet from the surface, and a very short time would now demonstrate the correctness or the fallacy of the views, as to the quantity of water to be obtained from these strata. The wells under London did not now yield more than eight millions of gallons per day, and the water-level had been gradually sinking. In the year 1824 the water, when not affected by pumping, rose to within 10 feet of high-water mark, but now it did not reach to within 60 feet of the same level.

## INSTITUTION OF CIVIL ENGINEERS OF IRELAND.

A GENERAL meeting of this institution was held in their rooms, Upper Sackville-street, on the 9th inst. Dr. Richard Griffith, in the chair, when Mr. Hemans, V.P. read a paper on the "River-walls and Floodbanks of the Upper Rhine."

He showed the means adopted by the Swiss engineers in controlling the course of that river, and preserving the country from the destructive effects of detritus suddenly brought down by the tributaries. Mr, Hemans exhibited plans of the embankments and other works designed by him for that portion of the line of railway under his superintendence between Lake Constance and Coire, and showed the reasons that induced him to adopt the form of embankment usual in railway practice in this country, in preference to that which had been adopted in river works in Switzerland. He also exhibited a spirit level section made by his assistants of the Lukmamir Pass over the Alps, with the proposed tunnel on the extension line from Coire to Milan and Genoa, and glanced at the geological nature of the range, and the expediency of working an incline with stationary engines in preference to tunnelling.

A discussion ensued, chiefly on the form and construction of embankments exposed to lateral currents, and the difficulty of constructing guiding-walls on shifting sands.

## Miscellanea.

A PRIZE FOR ARCHITECTS.—I was once proud of my descent from "the proud Salopians," who formerly preferred their ancient abbacy to a new bishopric. Plentiful evidence still remains of their love of architecture: that evidence however, methinks, is in stone, and not in humanity, if the Bridgenorth authorities represent the latter. In your advertisements of last week, the directors of the Bridgenorth Public Buildings, &c. appear desirous of receiving designs, &c. for public buildings, &c. &c. They offer 20*l.* and 10*l.* as baits; the first, however, to be disgorged if the (I was going to say) architect shall be hooked in for the erection. You would not credit such liberality if it were not rendered somewhat less profuse by the conclusion, that the particulars may be had for 5s. which, if there should be forty competitors, would eliminate the second premium. Your readers may be obtuse enough to imagine that because both the baits are to be furnished by the gudgeons themselves, therefore the small fry will not bite. Let us, however, watch these expert anglers.—F. R. I. B. A.

INCREASE OF BUILDINGS AT LIVERPOOL.—There were erected last year in Liverpool six warehouses and 829 houses. Of the houses 671 were under 25*l.* cent per annum.

HARWICH BURIAL-BOARD COMPETITION.—The burial-board of the parish of St. Nicholas, Harwich, met on Friday, the 5th instant, and after considering the designs sent in, determined upon those signed "Ad Rem cum Deo," which proved to be from Mr. C. H. Edwards, of London.

THE IRON TRADE.—We lately reported a nominal reduction of prices, agreed to—if we can say so—at the first of the quarterly meetings in Staffordshire,—bars to the extent of 30s. and other kinds, 20s. It has since been found that even these reductions will not tempt buyers, and at subsequent meetings of the ironmasters a nominal reduction of 40s. was resolved on by a large majority, while the remainder resolved not to abide by the *fiat* of the majority, but to insist on 20s. more. Nevertheless, it is reported that bars actually sold in the Hall on that occasion for 8*l.* 10s. It has heretofore been uniformly insisted that the urgent reducers of prices were "small" and "needy." In the present instance, the upholders of a mere 20s. reduction must be ultra-great and independent masters, for the small and needy now are the Thorneycrofts and many others of a similar class of manufacturers. The pig-makers have met, and have *resolved* that a reduction of 20 per cent.—some said 50 per cent.—in the make of pigs per week *should* be effected. It will be a new feature in the trade, however, if such a resolution be carried out into practice. In fact, the real meaning of each resolver no doubt is, that every *other* ought to reduce his make to the requisite extent. There is still no improvement in the American trade. On the contrary, our republican brethren talk of grand prospects of holding out the *iron* hand of fellowship to that *other* country of slaves and despots, Russia, which they are hoping to supply with iron themselves, and so to "cut us off" from all future ferruginous prospects in that quarter of the globe. Does it become those "Sons of Freedom," the Americans, to make common cause with the Russians in a struggle such as *this* is?

A WELL-SINKER BURIED ALIVE.—At St. Vigor-le-Grand, near Bayeaux, a well-sinker was lately buried in the midst of earth and woodwork, and although, after great and dangerous excavations, the poor fellow was reached, and even a rope put round his body, it was found impossible to draw him out without farther operations, which would incur the utmost hazard of not only burying him again, but those employed in extricating him. The Minister of the Interior had been communicated with, according to recent accounts in *Galignani*, and a priest had descended after four days, and given the man absolution in the midst of his fearful peril. We have since learnt that the poor fellow died in the well.

SCHOOL OF ART, TRURO.—A School of Art has been established at Truro, and it bids fair to be of service. The people seem anxious to gain a knowledge of drawing. Classes have been opened for the working classes in mechanical, perspective, geometrical, and free-hand drawing. Mr. G. R. Gill is the master of the school.

THE SCOTTISH AGRICULTURAL DWELLINGS IMPROVEMENT ASSOCIATION.—The first annual meeting of this association was held at No. 52, George-street, Edinburgh, last week, when many noblemen and gentlemen interested in agriculture were present and took part in the proceedings. The Duke of Buccleuch presided. The report, which congratulated the members on the progress made in the organization and objects of the association, was read and adopted. Lord Panmure moved a resolution, which was also passed, expressive of satisfaction with the progress already made, and a hope that still further success awaited their endeavours. The association have made arrangements for the collection and exhibition of cottage plans and specifications, some of which have been prepared by their architect, and some contributed towards the collection by other architects. Efforts are also being made to excite a general interest throughout Scotland in the improvement of hinds' dwellings.

SOMERSETSHIRE ARCHÆOLOGICAL SOCIETY.—The *conversazione* for January was held at the Museum, Taunton, on 8th instant, as appears from a report in the *Taunton Courier*. The chair was taken by Mr. W. E. Surtees, and Mr. E. Batten, of Lincoln's-inn, delivered a paper on the life of the monk Bacon, the enthusiastic and gentle scholar of the thirteenth century. After a tea interval, Mr. W. Metford, M.D. gave a paper on the "Luminosity of the Ocean." Drawings were exhibited by Dr. Kelly to illustrate the lecture. The Rev. Frank Warre read a paper prepared by the Rev. Mr. Scarth, of Bath, on stone and lead coffins, inscriptions, and other Roman remains, found at Bathwick, Combe Down, &c. Mr. C. E. Giles concluded, by submitting for inspection, three cartoons designed by Mr. Bell, of Bristol, for a triple light window, to be placed in the church at Aller, and representing, amongst two other subjects, the baptism of King Gudrum, after his defeat by the great Alfred. A drawing of the font, still extant, has been made by Mr. A. Clarke, to illustrate a paper to be read before the Society of Antiquaries, by the Rev. Thomas Hugo, of Taunton, M.A.

PROPOSED NEW DOCKS.—Amongst the works contemplated at the east end of the metropolis we hear is a scheme for constructing large docks at Dagenham, near Romford.

GAS PROFITS: MANAGEMENT IN MANCHESTER.—According to a statement lately made by the chairman of the gas committee in the Manchester Town Council, the gas works first established at Manchester in 1817, have had to undergo alteration within the last ten years almost amounting to a total reconstruction. Up to 1824 the works were alleged to have cost about 40,000*l.* The cost to the present time exceeds 400,000*l.* The total length of mains is estimated at between 170 and 180 miles, and the number of meters fixed about 19,000. The increase of business last year over the previous one was about 10 per cent. and it goes on at an increasing ratio. The present production of gas in the works is, in round numbers, 600,000,000 feet, and the capacity of the ground now gradually filling with apparatus, will enable the corporation to produce 1,200,000,000 cubic feet per annum. The price of gas to consumers is on a graduated scale of 4s. to 5s. per thousand feet. Out of the profits of these works the committee are able to pay over for public purposes, between 35,000*l.* and 40,000*l.* per annum; one-half of which sum goes to the making of public improvements in the city, and the other half to diminish the water-rate to the inhabitants. Nevertheless, attempts were some time since made, we remember, to deceive the Manchester gas consumers into the idea that it would be much better for them to be supplied by a self-seeking gas company. How the idea was worked out, it is not worth while to renote. In reference to gas profits, however, there is another point to which it may be more worth while to allude.

WANT OF EMPLOYMENT AT NEW YORK.—The *New York Herald* reports the existence of great distress among the working classes of New York. No less than 17,000 working people of all classes, it states, are out of employment, and without any actual prospect of work. Wages, too, are, of course, falling. Soup kitchens and provision depôts are being got up by the charitably disposed. The surplus labour in the city of New York, however, has the immense advantage of a wide and open country, through which it can soon be dispersed. Let them hive, like bees, under the leadership of some wealthy capitalist. In employing such a surplus for the clearance of backwoods and the foundation of towns, cutting out of railways, &c. both capitalist and operative might be speedily benefited. American workmen can "turn their hand" to anything, at a pinch. Had we backwoods in Britain, what a blessing they would sometimes be to starving multitudes!

IMPROVED MOTIVE POWER IN AMERICA.—For some months a series of scientific experiments have been made by Mr. E. K. Collins, with what is known as Wethered's patent, the object being to increase the power of steam without any increased expenditure for fuel. The patentees claim as new "the combining steam and superheated or surcharged steam for actuating engines, when generated, the elasticity increased and operated as set forth." The patent intends not steam simply surcharged with heat, but the use of a mixture of saturated and surcharged steam. By these means it is said a greater power can be derived with a certain quantity of fuel than from the use of saturated steam alone.

THE ISLINGTON POOR ESTABLISHMENT COMPETITION.—Many months ago the committee advertised for designs for a building, stating distinctly that no design would be received, or at least chosen, which would cost more than 4,000*l.* The case of Mr. Birch was discussed fully in your columns at the time, and certainly the ultimate rejection of that gentleman's claims was highly honourable to the committee. They then chose the design of Messrs. Jones and Parker, and advertised in your columns that unsuccessful designs would be returned on application. After some time the committee discovered, I think by means of public tender, that Messrs Jones and Parker's design could not be executed for the sum named. It was therefore rejected. This was also a highly honourable proceeding. After this the committee seemed puzzled. It clearly became their duty either to adopt the design of another competitor or to institute another competition. The former proceedings of this committee had been so extremely straightforward, that I waited in full expectation that one of these two courses would be pursued, when to my great astonishment I observed in your journal that tenders have been received for a design by Mr. F. Tyerman, the lowest tender being 8,669*l.* It is right to state that this includes fittings and drainage, neither of which were required originally by the committee. These two items would certainly not exceed 2,000*l.* There is therefore left 6,669*l.* for the cost of the building instead of 4,000*l.* Even supposing that Mr. Tyerman's design could have been executed for the money, is it not a breach of faith towards all the competitors to appoint as their architect a perfect stranger, simply on account of their incapacity of judging of the cost of the other designs?

A. B.

DRAINAGE SCHEME.—A scheme for the drainage of towns by means of receptacles formed at intervals, in connection with the common sewers as they ordinarily exist, and into which the sewage matter was to be diverted, and where it was to be separated into dry, inodorous manure or British Guano, and clear liquid manure, both of them to be distributed where required, was, it may be recollected, published in our 9th volume, page 637, together with illustrative diagrams. A scheme, precisely the same, has recently been published, in the form of a pamphlet, by Mr. Weale, of High Holborn, but without the author's name. It is titled, "A Scheme for the effectual Drainage of Towns; with Projects of important national Measures which may be engrafted upon it." These measures are, the ventilation of sewers, as suggested long since by the *Builder*, the employment of convicts in the preparation of the manures, and, finally, the erection of extensive "model lodging-houses" around the ventilating shafts, and right above the manure depôts. Whether the pamphlet is by the author of the article in our pages, the Hon. and Rev. A. H. Gore, or has been plagiarised by some other writer, does not appear.

SURVEYORS' RESPONSIBILITIES: DILAPIDATIONS.—In the case of *Jenkins* v. *Beetham*, tried at Lincoln, when a verdict was given for the defendants, Mr. Macaulay, Q.C. moved, some time ago, in the Common Pleas, at Westminster, for a rule to set aside that verdict, and for a new trial, on the ground that the verdict was against evidence. The plaintiff was a clergyman recently appointed to a living in Lincolnshire, and the defendants were surveyors employed by him to estimate the value of the dilapidations to which he was entitled on entering on his parsonage-house. The defendants estimated the value of the dilapidations at 18*l.* as the amount requisite to make the house watertight. But they were bound to survey on the principle of the sum required to put the house in substantial repair, and it was proved that it would take 109*l.* to do this. The learned judge had directed the jury that, if the defendants brought to the performance of the duty they had undertaken the ordinary skill of country surveyors, they were not liable, as they were not to be assumed to be lawyers enough to know the principle on which the survey was to be made. They had, however, been recommended as the chief ecclesiastical surveyors in Lincoln, and accustomed to this kind of survey. Rule *nisi* was granted, but we are not aware of the result.

BUILDINGS BY WHOLESALE.—I think that any one who reads the newspapers at the present time cannot have failed to notice the extraordinary celerity with which the wooden houses intended for our army in the Crimea have been prepared, packed up, and despatched for their destination. Now, for the future, might not the same plan be adopted for all wooden outhouses, barns, and sheds in our English farm-yards. Imagine the saving of time, trouble, and expense, if such sheds, instead of being sawn out by our village carpenters, were, on the measurements, &c. being given, at once sawn out and sent away with all the despatch that one of our great saw-mills is capable of. Again, for ordinary houses all the woodwork might be prepared in this way, the stone, bricks, and rough materials being furnished on the spot. Of course this plan would be applicable in especial to all emigrants, who, instead of setting out for a country where, on first landing, they would be houseless and homeless, would (I will not say like snails) carry their houses with them.—AGRICOLA.

WESTMINSTER ACT FOR IMPROVING THE DWELLINGS OF THE POOR.—It having been represented that the Westminster Act offers the long desired facilities for the establishment of local societies for the improvement of dwellings with the utmost privileges, involving exemption from personal liability, beyond the amount subscribed, the *Labourer's Friend* has printed the first clauses of the Act for the information of its readers.

HOW TO SUCK BRAINS CHEAP.—Mr. Builder,—When I com'd for Surinam at efter I'd bin dun by brother Matty, I gat a lift to t'united States, but I nowt but bided there a bit, for I fun out they were ower cute for a chap like I, so I comed hoam agin, as I coudn't exactly fashion to tak to thear waays, and I bethowt me twor better to try and get on in towd way at walling, or clois yat hinging or owt els at wad pay. Well, tother day, I wor reading of yawr paper, and I seed an advertisment to artcheticts at baits owt for impudence at I iover seed i Kentucky. It wor an offer o' 20 pun fort best plans for a beeldin, and they as gies em is to do't work, but 20 pun is to go with it commission, so they has ony getten 10 pun to pay. As all they as tries for it mun pay 5 shillins, just reckonin the usual number as maks such fooils of theirsels aboon 40, they gets prise for nowt, and as oftentimes there be more, they get what it pay for t'advertisements and all. This wad shame t'Americans, howsomever cute.

SAM SHARPSET.

WILL THE PUBLIC LEARN? — Your able correspondent, Mr. Tarbuck, in his articles on "The present Position of Architecture," has, in my humble judgment, borne a little too hard on the public, while pointing out the incontrovertible fact that "styles are now *adopted* instead of generated;" unless, indeed, he would wish to prove that professors and teachers are useless, and that all true genius issues from "the people," without direction—without teaching. And yet the articles are themselves a proof that we have teachers, both of art and architecture, and that they are required; that there are "men who evidently think for themselves;" and that there are men who give their free opinions on the exploded notion, that "true principles of architectural proportion, are *only* found in pointed edifices," or any other style. Let me entreat him, then, and all the other men of his noble calling, not to forget that to the professors of a science, *we* look for a sufficient amount of disinterestedness to teach us that which they believe to be true, even if their "very existence is dependent on the favour of their clients." The public will appreciate genius when it appears in the architectural form, for then it is sensibly brought before them.—ONE WHO ACKNOWLEDGES THE "BUILDER" TO BE A TEACHER.

REPAIRING METAL TOOLS.—A case is reported in the *Birmingham Journal* as lately occurring at the County Court there, in which plaintiff was a vice-maker, and defendant a lock-maker. The action was to recover 16s. Defendant, a Mr. Smith, required a shop-vice to be repaired, to be "steeled" on both its sides, and sent it to Mr. Massey, the plaintiff, for the purpose. Only one side had been steeled, and the article was sent to Hill's, in Digbeth, where it was properly done, and defendant had paid Mr. Hill for it. Plaintiff laid the blame upon one of his men. Verdict for defendant.

BATH SCHOOL OF ART.—On 2nd inst. the general committee of this recently established school met and received a report from the executive committee, on the objects, position, and operations of the school. An exhibition of drawings from Gore House, including even a few from the Bath School itself, has been lately held in this city, for the promotion of an interest in art amongst its inhabitants.

EFFECT OF A LITTLE ORDER AT LONDON-BRIDGE.—The usual confusion and obstruction at London-bridge have been greatly lessened simply by regulating the traffic so that waggons and all slow-going vehicles are made to keep close to the side-walks, while the central roadway is appropriated to the fast traffic alone.

IRONWORKS IN SUSSEX.—In reply to an inquirer, we believe it will be found that up to as late as 1720 Sussex was the principal seat of the iron manufactory in England; but as the woods failed in providing fuel, the manufacture was removed to the coal districts. There was a furnace alight there, however, as late as 1827.

MEASURE OF STONE.—In reply to your correspondent's query as to "the quantity in cubic feet that constitutes a *perch* of stone, a common term in the western counties," I beg to inform him that a perch of walling is generally considered in this neighbourhood (Torquay) to be 16½ superficial feet, 20 inches thick, which is 27 feet 6 inches cube. Beyond 20 inches in thickness, unless by special agreement, it is calculated as a wall and a half or two walls, according to the extra thickness, and so on. It is not uncommon to *define* what shall *constitute* a perch of walling in the specification of work.

EDWARD APPLETON.

## TENDERS

For pulling down and rebuilding the Museum Tavern, Russell-street, Bloomsbury. Mr. Wm. Finch Hill, architect:—

| | | | |
|---|---|---|---|
| Soward | £2,589 | 0 | 0 |
| Patrick and Son | 2,574 | 0 | 0 |
| Holland | 2,500 | 0 | 0 |
| Johnson | 2,427 | 0 | 0 |
| Elston (accepted) | 2,398 | 0 | 0 |

## TO CORRESPONDENTS.

"*A Material Wanted.*"—Can you or any of your readers help me to a material for working the cornice and enriched mouldings of a shop-front, combining the following virtues,—Shall be pronounced fire-proof by district-surveyor, easily worked, and very light; compo inadmissible; the entablature worked in slate, probably with a bearing of about 9 feet 6 inches?—S. G. O.

"*Red Bricks.*"—Can any of your correspondents give any information as to where the red brick rubbers, used in the gauged arches and moulded work of the buildings in London, built in the time of Queen Anne and George I. came from, and of what kind of clay they were made?—UNBURNT STOCK.

"A Clerk of Works," "J. W. B." "E. M." Bd. (some of the back numbers will be found at the office), "J. M." (answered, January 9th), "Palladio," "S. F." "W. E. M." (send us particulars), "H. F." "R. D. C." "Rev. J. G." "E. C. R." "G. B. N." "W. B. Salisbury," "F. W." "J. P." "T. O." "D. B." "A. S. G." (will be made use of), "J. S." "J. R." "M. L." (we believe it was in the *Daily News*), "J. and J. H." "A Northern Subscriber," "*Pro Rata*," "*Re* Noxious Trades," "A Subscriber," "T. B." "W. G."

"*Books and Addresses.*"—We are forced to decline pointing out books or finding addresses.